PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA

Institute of Environmental Engineering

(наименование основного учебного подразделения (ОУП)-разработчика ОП ВО)

COURSE SYLLABUS

Engineering Ecology / Инженерная экология

(наименование дисциплины/модуля)

Recommended by the Methodological Council for the Education Field:

05.04.06 Ecology and nature management

(код и наименование направления подготовки/специальности)

The discipline is mastered within the framework of the main professional higher education program:

Economics of natural resources management

(наименование (профиль/специализация) ОП ВО)

2024

1. COURSE GOALS

The course is aimed at studying the acquisition of professional competencies and knowledge about the basic laws operating in ecological systems and the principles of balance in nature, forms of human intervention in the natural environment, ways to reduce the volume of such intervention and reduce its negative consequences. The program provides an introduction to the basic principles and methods of environmental protection, assessing the efficiency of treatment equipment, the concepts of environmental payments, the possibilities of organizing closed production cycles, and the basic principles of the circular economy.

The purpose of mastering the discipline is to study the theoretical foundations and practical approaches to assessing the impact of major industries on environmental systems, as well as to study the main modern technologies for environmental protection.

2. LEARNING OUTCOMES

The mastering of the discipline "Engineering ecology" is aimed at the formation of the following competencies (parts of competencies) in students:

Table 2.1. List of competencies formed by students during the development of the discipline (LEARNING OUTCOMES)

Code	Competence	Indicators of competence achievement (within the framework of this discipline)
GPC -2	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	**GPC -2.1** Knows the basics of ecology, geoecology, environmental economics and circular economy, as well as environmental management
		GPC -2.2 Able to use environmental, economic and other special knowledge and algorithms to solve professional problems
		GPC -2.3 Able to find, analyze and competently use the latest information and modern techniques in the performance of research and applied tasks
		GPC-2.4 Analyzes the current system of environmental regulation for various areas of environmental management
		GPC-2.5 Identifies and describes biological diversity, evaluates it using modern methods of quantitative information processing
PC-10	Capable of monitoring the state of the environment using environmental technologies	**PC-10.1** Capable of monitoring compliance with environmental protection requirements
		PC-10.2 Capable of developing an action plan aimed at meeting the requirements of regulatory legal acts in the field of environmental protection, taking into account best practices
		PC-10.3 Capable of analyzing large amounts of professional information
PC-11	Able to determine the structure and master the methods of zoning the assessed territory according to the types of anthropogenic load and environmental components	**PC-11.1** Knows methods of zoning the assessed territory according to the permissible anthropogenic load on environmental components
		PC-11.2 Able to determine the structure of anthropogenic load on environmental components
		PC-11.3 Able to identify areas of increased environmental hazard

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Engineering ecology" refers to Compulsory Disciplines of the Higher Education Program.

Within the framework of the higher education program, students also master other disciplines and/or practices that contribute to expected learning outcomes of the discipline "Engineering ecology".

Table 3.1. List of Higher Education Program components that contribute to expected learning outcomes

Code	Competence	Previous Disciplines (Modules)	Subsequent Disciplines (Modules)
GPC -2	Able to use special and new sections of ecology, geoecology and nature management in solving research and applied problems of professional activity.	Modern Technologies for Nature Protection / /Environmental impact assessment (EIA) of SWM objects Basics of Circular Economics Green Economy and Tools for Enterprises Sustainable Development	State Exam Master's Thesis Defence /
PC-10	Capable of monitoring the state of the environment using environmental technologies	ОВОС объектов в сфере управления отходами /Environmental impact assessment (EIA) of SWM objects	Master's Thesis Defence / State Exam /
PC-11	Able to determine the structure and master the methods of zoning the assessed territory according to the types of anthropogenic load and environmental components	no	Master's Thesis Defence State Exam

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Workload of the course «Engineering ecology» is 3 ECTS.

Table 4.1. Types of academic activities during the period of the HE program mastering

Вид учебной работы		**TOTAL**	**Semesters**			
			1	**2**	**3**	**4**
Contact academic hours		*34*			*34*	
Incl.:						
Lectures		17			17	
Lab work						
Seminars		17			17	
Self-study		*47*			*47*	
Evaluation and assessment		*27*			*27*	
Total workload	Ac.hours	**108**			**108**	
	ECTS	**3**			**3**	

5. COURSE CONTENTS

Table 5.1. The content of the discipline (module) by type of academic work

Name of the discipline section	Content of the section (topics)	Type of academic activity*
Anthropogenic processes as a factor of environmental pollution.	Modern anthropogenic activities and environmental pollution factors. OS components: atmosphere, hydrosphere, pedosphere. Features of the distribution of ecotoxicants in abiotic and biotic components	L, S
Self-cleaning ability of ecosystems. Parameters of ecosystem sustainability	Principles of the existence of ecosystems. Homeost Resistance of ecosystems to pollution. Cycle of substances and elements. Soil microbiocenosis and soil functions.	L, S
	The ability of ecosystems to self-purify. Abiotic processes of self-purification. Biotic processes of self-purification.	
	Microbiocenoses of water bodies. Microflora air. Degree and speed of self-cleaning. Assimilative capacity of the ecosystem	
Sources and types of hydrosphere pollution. Wastewater	Main sources of wastewater generation. Classification and composition of wastewater. Kinds sewage pollution	L, S
	Modern methods of wastewater treatment. Technological cleaning schemes. Organization closed water production cycles.	
Sources and types of atmospheric pollution. Gas air emissions.	Sources and types of air pollution. Classification and composition of gas-air emissions.	L, S
	Principles of atmospheric air protection. Modern methods of cleaning gas-air emissions and protecting atmospheric air.	L, S
Sources and types of pedosphere pollution. Solid waste	Sources and types of pedosphere pollution. Solid waste concept. Sources of generation and classification of waste. Hazardous waste	L, S
	Fundamentals of sustainable waste management. Energy and material potential of waste. Principles of the circular economy.	L, S
	Sources of formation of solid industrial waste. Municipal solid waste. Environmental features of hazardous waste.	L, S
Modern methods of solid waste and sewage sludge management	Basic methods of liquidation and processing of industrial non-radioactive waste. Disposal in landfills and landfills. Heat treatment.	L, S
	Basic methods of processing and disposal of municipal solid waste. Sorting and use as secondary raw materials.	L, S
Accumulated harm to the environment (AED). AED objects and their remediation (restoration)	Classification of NVOS objects. Stages and methods of environmental rehabilitation of objects NVOS: technical, biological.	L, S
	Remediation of soils and closed landfills. Cleaning soils and grounds from ecotoxicants (petroleum products, heavy metals). Biological	

	recovery methods reservoirs. Cleaning water bodies from petroleum products, heavy metals	

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Classroom for Academic Activity Type	CLASSROOM EQUIPMENT	Specialized learning, laboratory equipment, software and materials for the mastering the course
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means of multimedia presentations.	A set of specialized furniture; chalk board; technical equipment: HP PRO system unit, HP-V2072A monitor, LUMIEN retractable projection screen, Internet access. Microsoft Windows 7 corporate. License No. 5190227, date of issue 03/16/2010 MS Office 2007 Prof, License No. 6842818, issue date 09/07/2009
Seminars	Classroom, equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, projection screen, Stable wireless Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release), Skype	
Self-studies	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to an electronic information and educational environment.	-

7. RECOMMENDED SOURCES FOR COURSE STUDIES

- *Main reading:*

1. Mihelcic J. R., Zimmerman J. B. Environmental engineering: Fundamentals, sustainability, design. – John wiley & sons, 2021.

2. Wang L. K. et al. (ed.). Integrated natural resources management. – Switzerland : Springer Nature, 2021. – T. 20.

Additional sources:

1. Saxena, Gaurav, R. Kishor, and R. N. Bharagava. Bioremediation of industrial waste for environmental safety. Springer Singapore, 2020..

2. Kumar S., Kalamdhad A., Ghangrekar M. M. (ed.). Sustainability in Environmental Engineering and Science: Select Proceedings of SEES 2019. – Springer, 2020.

Internet-sources:

1. Electronic library system of the RUDN and third-party electronic library systems, to which university students have access on the basis of concluded contracts:

- electronic library system of the RUDN University http://lib.rudn.ru/MegaPro/Web

- electronic library system «Университетская библиотека онлайн» http://www.biblioclub.ru
- electronic library system Юрайт http://www.biblio-online.ru
- electronic library system «Консультант студента» www.studentlibrary.ru
- electronic library system «Лань» http://e.lanbook.com/
- electronic library system «Троицкий мост»

2. Databases and search engines:
- electronic fund of legal and regulatory and technical documentation http://docs.cntd.ru/
- Yandex search engine https://www.yandex.ru/
- Google search engine https://www.google.ru/
- abstract database SCOPUS http://www.elsevierscience.ru/products/scopus/
- ……..

*Educational and methodological materials for independent work of students during the development of the discipline/ module *:*

1. A course of lectures on the discipline "Engineering ecology".

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the discipline page in the Telecommunication educational and Information System!

8. MID-TERM ASSESSMENT AND EVALUATION TOOLKIT

Evaluation materials and a point-rating system* for assessing the level of competence formation (part of competencies) based on the results of mastering the discipline "Engineering ecology" are presented in the Appendix to this Work Program of the discipline.

* - evaluation toolkit and ranking system are formed on the basis of the requirements of the relevant local regulatory act of the RUDN (regulations / order).

DEVELOPER:

Associate Professor of the ESandPQM Department		**Kharlamova M.D.**
Position, Department	Signature	Name

HEAD OF THE DEPARTMENT:

ESandPQM Department		**Savenkova E.V.**
Department	Signature	Name

HEAD OF PROGRAMME:

Associate Professor of the EM Department **Kapralova D.O.**

Department Environmental Safety and Product Quality Management
educational department to be specified

APPROVED
Department meeting protocol No_____,
Dated _____
day, month, year
Head of Educational Department
_____(Savenkova E.V.)
signature

ASSESSMENT TOOLKIT

for the course

Engineering Ecology / Инженерная экологияfield of studies / speciality code and title

05.04.06 "Ecology and nature management"
field of studies / speciality code and title

«Integrated Solid Waste Management»

higher education programme profile/specialisation title

Master
graduate's qualification (degree)

Passport to Assessment Toolkit for Course Engineering Ecology / Инженерная экология

Field of Studies / Speciality 05.04.06 "Ecology and Nature management"/ «Integrated Solid Waste Management»

code title

Course: **Engineering Ecology / Инженерная экология**

Code of controlled competence or part thereof	Controlled section of the discipline	Name of the assessment tool						
		Work in class	Passing a colloquium (work on a given topic)	Defense of project assignments (in stages)	Passing laboratory work	Interim testing	Defense of an essay	Final testing
GPC-2	Anthropogenic processes as a factor in environmental pollution (1 topic)	3		2		4		
GPC-2 PC-10 PC-11	The ability of ecosystems to self-purify. Parameters of ecosystem sustainability (3 topics)	9		2		4		
GPC-2	Sources and types of hydrosphere pollution. Wastewater (2 topics)	6		2		4		
GPC-2	Sources and types of air pollution. Gas-air emissions. (2 topics)	6		2		4		
	Sources and types of pedosphere pollution. Solid waste (3 topics)	9		2				3
GPC-2	Modern methods of handling solid waste and sewage sludge (2 topics)	6		2				4
PK-10 PC-11	Cumulative environmental	6		2				4

GPC- 2	damage (CEC). NVOS objects and their remediation (restoration) (2 topics)							
		45		**14**		**16**	**11**	14

2. ASSESSMENT MATERIALS FOR CURRENT CONTROL OF STUDENTS' ACHIEVEMENT AND INDEPENDENT WORK IN THE DISCIPLINE

Solving practical tasks is used to assess the quality of students' mastery of part of the educational material of the discipline and the level of development of the relevant competencies (parts of the competence). The content and form of the case report are given in the relevant Guidelines posted on the discipline page in TUIS. The contents of the report, the scale and criteria for evaluating the report (Table 2.1.) are brought to the attention of students at the beginning of each lesson.

The report is assessed as "passed" or "failed". The grade is announced to the student immediately after defending the report.

Table 2.1. Scale and criteria for evaluating laboratory reports

Scale	Criteria assessments
The grade is "passed" (all points planned for a specific laboratory work of the BRS are awarded)	- presentation of the material is logical and competent; - fluency in terminology; - the ability to express and justify your judgments when answering test questions; - ability to describe the phenomena and processes being studied; - ability to resolve specific situations (it is acceptable to have minor errors or insufficiently complete disclosure of the content of the question or an error of an unprincipled nature in answering questions).
"Failed" grade (no points awarded)	- lack of necessary theoretical knowledge; errors were made in defining concepts and describing the phenomena and processes being studied, their meaning was distorted, measurement results were not assessed correctly; - ignorance of the basic material of the curriculum, gross errors in presentation are made.

Abstract topics:
Human activity and the evolution of the biosphere
The role of environmental engineering
The main pollutants of the atmosphere, hydrosphere. lithosphere
Environmental disasters and disasters.
Criteria for crisis and disaster
Functioning and bioproductivity of ecosystems, agroecosystems
Urbanization and its impact on the biosphere.
The city as a new habitat for humans and animals
Impact of road transport on the environment.
Road traffic flows.
Cleaning soils from oil products

3. ASSESSMENT MATERIALS FOR INTERMEDIATE CERTIFICATION IN THE DISCIPLINE

Interim certification in the discipline " Engineering ecology " is carried out in the form of a certification test **based on the results of studying the discipline/at the end of the autumn and summer semester** . Types of certification tests - **TEST WITH ASSESSMENT** *(in accordance with the approved curriculum).*

The certification test is carried out on tickets containing three questions on the discipline course. Based on the results of the certification test, the student can receive from 1 to 15 points.

Questions to prepare for the certification test
by discipline "Engineering ecology / Engineering ecology" :

1. Indicate which section is currently included in many projects as mandatory:
a) “Optimization of living conditions”;
b) “Life safety”;
c) “Biological diversity”;
d) “Restoration of natural monuments”;
d) “Nature conservation”.
2. Select the main general scientific principles of geoecological design:
a) the principle of transparency of expert assessment and maximum economic efficiency of the project;
b) the principle of environmental and economic efficiency of the project, taking into account the regional specifics of reducing environmental risk;
c) the principle of mandatory creation of geo-equivalents ;
d) the principle of confidentiality of the process of expert assessment, forecasting and monitoring.
3. State the basic principle of geo-environmental design. This:
a) the principle of territorial differentiation;
b) design of a spatial-temporal natural-technical geosystem;
c) the principle of ubiquity of environmental protection measures;
d) the principle of prevention ; d
) the principle of taking into account the operating mode of the PTGS.
4. What activities does engineering preparation of the area for development include, taking into account the environmental factor?
a) fencing the building area around the perimeter;
b) ecological and functional zoning of the territory;
c) laying access roads to the development site;
d) removal of fertile soil: leveling, drainage, sanitary cleaning.
5. When choosing the location of an industrial facility (choosing an industrial site), preference is given taking into account the wind rose and in relation to the residential area:
a) leeward side;
windward side;
) recreational zone, regardless of the wind rose;
d) territory that is optimal in terms of transport, regardless of the wind rose; e) areas exposed to the greatest insolation.
6. Specify:
a) the main factor determining the size of the sanitary protection zone of an industrial enterprise;
b) the length of the sanitary protection zone for a metallurgical plant of hazard class 1. 1.
a) size of the industrial site;
b) 800 m.
2. a) landscaping near the industrial area . enterprises;
b) 600 m.
3. a) hazard class of the enterprise; b) 1000 m.
4. a) the number of employees of the enterprise; b) 300 m.
5. a) availability of treatment facilities; b) 900 m.

7. Indicate environmentally feasible ways to organize optimal transport infrastructure in large industrialized cities:
a) laying freight highways through residential areas;
b) organization of traffic flows in the public center:
c) reducing the number of intersections and building overpasses;
d) creation of bypass routes for transit transport, differentiation of streets by type;
e) reducing the number of intersections and creating multi-level transport routes.
8. Forecast and assessment of the impact on the natural environment of any project of economic and other human activity that could potentially have a negative impact on the environment is:
a) environmental design
b) environmental assessment
c) geoecological examination
d) environmental audit
9. The main part of the design documentation, including a forecast of the impact of the designed facility on the natural environment and an environmental, economic and social assessment of possible changes and consequences, is:
a) environmental audit
b) environmental impact assessment
c) environmental assessment
d) environmental justification of the project
10. Classification of environmental design objects, which distinguishes environmental and biotechnological objects, is a classification:
a) by sector of economy
b) by the type of exchange of matter and energy between natural geosystems and engineering structures
c) according to the degree of environmental danger for humans and nature
d) according to the degree of pollution
11. The environmental assessment procedure is focused on:
a) analysis of the impact of all economic projects;
b) impact analysis, primarily of large projects; c) analysis of the impact of only large land-based projects;
d) impact analysis of all offshore projects
12. The principle of preventiveness of the environmental assessment procedure means:
a) analysis of the impact of business projects before making decisions on implementation;
b) analysis of the impact of economic projects after the completion of construction of facilities;
c) analysis of the impact of economic projects during construction;
d) analysis of the impact of economic projects during the liquidation of facilities.
13. The principle of comprehensiveness of the environmental assessment procedure means:
a) joint accounting of impact factors in natural environments;
b) joint consideration of impact factors in natural environments and in the social environment;
c) taking into account factors affecting all biotic communities;
d) joint consideration of factors influencing all biotic communities and landscapes.
16.

Table 3.1. Scale and criteria for evaluating students' responses to the certification test

Criteria assessments answer	**Points**		
	Answer Not corresponds criterion	**Answer partially**	**Answer fully corresponds criterion**

		corresponds criterion	
The student completes the task without the participation of the teacher	0	12	3
The student is able to translate the problem into the language of geoinformatics	0	12	3
The student knows exactly what program functions he needs	0	12	3
The student knows exactly where the necessary program functionality is located	0	12	3
The student is able to solve problems and errors in the program independently	0	12	3
TOTAL			**15**

п / п	**Assessment tool**	**Brief features**	**Assessment tool representation in the kit**
Class work			
1	Survey/Quiz	A tool of control, organised as a special conversation between a teacher and students on topics related to the course under study, and designed to clarify the amount of students' knowledge in a particular section, topic, problem, etc.	Questions on the course topics /modules
2	Test	A system of standardised tasks that allows the teacher to automate the procedure for measuring the student's level of knowledge and skills	Tests bank
3.	Colloquium	A tool for monitoring the acquisition and mastering of educational material on a topic, section or sections of a discipline, organised as a training session in the form of an interview among the teacher and students.	Questions on the course topics /modules
4	Control work	A tool of control organised as a classroom lesson, at which students need to independently demonstrate the acquisition and mastering of the educational material of the course topic, section, or sections.	Questions on the course topics /modules
5	Lab work	The system of practice tasks aimed at the students' practical skills formation	Practice tasks bank
6.	Round table, discussion, polemic, dispute, debate, (class work)	Evaluation tools that allow the teacher to engage students in the process of discussing controversial issues, problems and assess their ability to argue their own point of view.	List of themes for round tables, discussions, polemics, disputes, debates.

7	Business game and/or role play	Joint activities of a student group under the teacher's control to solve educational and professionally oriented tasks through the simulation of a real-world problem; this activity allows the teacher to assess the students' ability to analyse and solve typical professional challenges.	Topic (problem), concept, roles and expected results for each game
8.	Essay	A tool that allows the teacher to assess the student's ability to express in writing the essence of the under study, to independently analyse this issue using the concepts and analytical tools of the relevant discipline, to draw conclusions that summarise his/her position on the issue under consideration.	Themes for essays
9.	Presentation (defence) of project/report/ Library research paper /briefs *	A tool for monitoring the students' ability to present the work results to the audience.	Themes for projects/reports/ Library research paper/ briefs
10	Pass/Fail assessment	A tool for checking the quality of students' performance of laboratory work, acquisition and mastering of the practice training and seminar educational material, successful completion of the advanced field internship and pre-graduate internship and fulfillment of all training assignments in the course of these internships in accordance with the approved programme.	Tasks examples
11	Exam	The evaluation of the student's work during the semester (year, the entire period of study, etc.); it is designed to identify the level, soundness and systematic nature of theoretical and practical knowledge gained by the student, formation of independent work skills, development of creative thinking, ability to synthesise the acquired knowledge and apply it to solve practice tasks.	Examples of tasks/questions/exam question cards
12	Internship and research and development (R&D) report	A form of written work that allows the student to generalise his/her knowledge, skills and abilities acquired during the introductory and advanced field internships, scientific and industrial internships and R&D activities.	
13	Case	A problem-solving task in which the student is asked to comprehend the real work-related (occupational) situation necessary to solve the problem.	Assignments to solve the case

14	Multi-level tasks and assignments with varying difficulty	The tasks and assignments differ in terms of the following levels: a) reproductive level allows the teacher toevaluate and diagnose the students' knowledge of factual material (basic concepts, algorithms, facts) and the students' ability to correctly use special terms and concepts, recognize objects of study within a certain section of the discipline, b) reconstructive level allows the teacher toevaluate and diagnose the students' abilities to synthesise, analyse, generalise factual and theoretical material and formulate specific conclusions, establish cause-andeffect relationships, c) creative level allows to evaluate and diagnose students' skills to integrate knowledge of various fields, argue their own point of view.	Set of multi-level tasks and assignments with varying difficulty
		Self- studies	
1	Calculation and graphic work	A tool for checking students' skills in applying the acquired knowledge according to a predetermined methodology in task solving or fulfilling assignments for a module or discipline as a whole.	Set of tasks for calculation and graphic work
2	Course work/project	A type of independent written work aimed at the creative development of general professional and specialised professional disciplines (modules) and the development of relevant professional competences	Course assignment themes
3	Project	The final "product" that results from planning and performance of educational and research tasks set; it allows the teacher to	Themes for teambased or individual projects
		assess the students' ability to independently shape their knowledge in the course of solving practice tasks and problems, navigate in the information environment and the students' level of analytical, research skills, skills of practical and creative thinking; it can be implemented individually or by a group of students.	
4	Research essay (Library research paper)	The student's independent work in writing that summarises the results of the theoretical analysis of a certain scientific (educational and research) topic, where the author reveals the essence of the problem under study, considers different points of view, as well as argues his/her views on the material under consideration.	Themes for research essay (library research papers)

5	Reports, briefs	The product of the student's independent work, which is a public performance on the presentation of the results of solving a specific educational, practical, research or scientific topic.	Themes for reports, briefs
6	Essay and other creative assignments	A partially regulated assignment that has a non-standard solution and allows the teacher to diagnose students' skills in integrating knowledge from various fields and arguing their own point of view; it can be prepared individually or by a group of students.	Themes for teambased or individual creative assignments
7	Standard calculations	A tool to test skills in applying the acquired knowledge, according to a predetermined methodology, solving tasks or fulfilling assignments for a module or discipline as a whole.	Set of tasks for standard calculations
8	Homework	The tasks and assignments differ in terms of the following levels: a) reproductive level allows the teacher to evaluate and diagnose the students' knowledge of factual material (basic concepts, algorithms, facts) and the students' ability to correctly use special terms and concepts, recognize objects of study within a certain section of the discipline, b) reconstructive level allows the teacher to evaluate and diagnose the students' abilities to synthesise, analyse, generalise factual and theoretical material and formulate specific conclusions, establish cause-andeffect relationships, c) creative level allows the teacher to evaluate and diagnose students' skills to integrate knowledge of various fields, argue their own point of view.	Set of multi-level tasks and assignments with varying difficulty

DEVELOPER:
Associate Professor of the ES&PQM Department — **Kharlamova M.D.**

Position	Signature	Surname I.O.

HEAD OF DEPARTMENT:
Director of ES&PQM Department — **Savenkova E.V.**

Position	Signature	Name, Surname

HEAD OF PROGRAM:
Associate Professor of the EM Department — **Kapralova D.O.**

Position	Signature	Name, Surname