**SYLLABUS**

**Fall semester 2021-2022 academic years**

**on the educational program “7M05211- Ecology\_”**

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| **Discipline’s code** | **Discipline’s title** | **Independent work of students (IWS)** | **No. of hours per week** | | | | | **Number of credits**  **ECTS** | **Independent work of student with teacher (IWST)** |
| **Lectures (L)** | **Practical training (PT)** | | **Laboratory (Lab)** | |
| **OPNI 6305** | **Organization and planning of Scientific Research**  **( English Language)** | 98 | 15 | 30 | | 0 | | 5 | 7 |
| **Academic course information** | | | | | | | | | |
| **Form of education** | **Type of course** | **Types of lectures** | | | **Types of practical training** | | **Number of IWS** | | **Form of final control** |
| On-line | Multidisciplinary, Scientific research | overwide and informational lecture; problem lecture (new concepts, alternative views), lecture - visualization (Internet search, video, PP presentation), lecture-conference (mainly students' presentation on pre-selected topics), lecture "in a new way" (it is conducted by students on new material) | | | analysis, discussion, dispute, work in pairs, group, report, PP presentation, Internet search, project defense and etc. | | 4 | | Exam |
| Lecturer | Bazarbaeva T.A. | | | | | |  | | |
| e-mail |  | | | | | |
| Telephone number |  | | | | | |

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| **Academic presentation of the course** |

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| **Aim of course** | **Expected Learning Outcomes (LO)**  As a result of studying the discipline the undergraduate will be able to: | **Indicators of LO achievement (ID)**  (for each LO at least 2 indicators) |
| **To form the ability, and skills and competences of effective independent research work, its organization and planning based on an understanding of the methodology of scientific knowledge, the role of science in the modern world (R&T; R&D) by analyzing scientific and metric databases and development trends in the field of research for preparing a master's dissertation and solving specific problems of ecology and environmental protection research projects successfully** | LO1- To understand the scientific knowledge methodology, the role of science in the modern world and history of its development | ID.1.1 – Justify the role and place of science for human society,  ID.1.2 – To detect specific features (characteristics) of science and the history of the development of science and technologies in the World;  ID.1.3 –Explain directions and types of scientific researches;  ID.1.4 - Understand the methodology of scientific knowledge, classification of methods of cognition,  ID.1.5 - Describe the structure of natural scientific knowledge on the example of master research. |
| LO2- Evaluate development trends in the field of research, scientific and technical activities (R&T; R&D) | ID.2.1- Argument the strategy for the development of modern science in the direction from R&D toR&T;  ID.2.2 – Discuss the organization of scientific activities in the country as part of the scientific and technological development strategy of the Republic of Kazakhstan;  ID.2.3 - Interpret the program-targeted method of funding science and create technologies;  ID.2.4 - Analyze grants of international and national Funds to support researches;  ID.2.5 - Compare the legislation in the scientific and technical sphere of the Republic of Kazakhstan and NIS countries. |
| LO3 - Analyze modern scientific and technical information, evaluate scientific-metric databases and Science indicated Citation Index Expanded ( Web of Science, Scopus, etc.) for use in research activities | ID.3.1 – Discuss about the system of scientific and technical information of the Republic of Kazakhstan. Classify sources of scientific and technical information, including in the field of research;  ID.3.2 - Select scientific journals according to the impact factor, including the subject area of ​​research;  ID.3.3 - Evaluate the effectiveness of a researcher's scientific activity using the Hirsch index and work with modern scientific-metric databases of research activity indices (Scopus Author ID, Researcher ID, ORCID), research papers with Digital Object Identifier DOI;  ID.3.4 - Compare the requirements for writing abstracts, papers in scientific journals and conference proceedings , etc.;  ID. 3.5 - Demonstrate writing skills of scientific paper in a rating journals (Scopus, Republican rating) on ​​the topic of a master's dissertation |
| LO4 - Manage independent research for the preparation of a master's thesis (dissertation) in a specialty “7M05211- Ecology\_” | ID.4.1 - Discuss the system of training scientists and high quality specialists in different countries in the World (master's degree, PhD l studies, post-doctoral studies);  ID.4.2 - Assess the requirements for writing master's thesis (dissertation) in the Republic of Kazakhstan;  ID.4.3 - Justify independent research according to the rules of the methodology: problem - subject - object - - goal - task - hypothesis - the main stages;  ID.4.4 - Effectively organize scientific work and plan experiments, time - management techniques for the preparation of master's thesis(dissertation);  ID.4.5 - Substantiate research results and conclusions, recommendations for a master's dissertation. |
| LO5 - To conduct an independent researches solving specific problems of ecology and environmental protection by research projects and patenting results of activity | ID.5.1 – Discuss and select advanced knowledge, ideas and reasons for learning and professional activities in the field of geographical sciences, ecology and natural resource management to achieve development goals(SDG’s);  ID.5.2 - Assess the requirements for preparing research project in the Republic of Kazakhstan;  ID.5.3 – To prepare scientific project in the field of researches;  ID.5.4 - Assess the requirements for patenting results of researches in the Republic of Kazakhstan;  ID.5.5 - To prepare patent and/or license in the field of researches. |
| **Prerequisites** | IFN 5201-History and philosophy of science,Psy 5204- Psychology**,**  IYa 5202**-**Foreign Language,MOS 5206- Environmental management (English), TZOS 5208- Technologies of environmental protection,SMORE 5301-Modern Methods of Risks Assessment | |
| **Post requisites** | KOPPPT 6307-Integrated Assessment of Natural and Industrial Potentials of the Territories, UEBP 6309-The Management of Industrial environmental Safety, EcoU 6307- Ecosystem health and services, UKOPPV 6308 -Quality Management and Protection of Surface and Ground Waters (English), NIRM2 – Master Degree Dissertation Writing; NIRM4 – Publication in the Proceedings of International Conferences and Scientific journals. | |
| **Information resources** | 1. Laws RK: «About education»,2010; «About a science», 2011; «About innovative activity»; 2. Concept of scientific and scientific and technical policy of the Republic of Kazakhstan; Strategy of industrial and innovative policy of the RK; Strategy Plan of the Development in Kazakhstan 2021-2025;   Internet resources on R&D and R&T , Master Degree Dissertation, Research projects ,Patent and Licenses, including English sites: [https://www.gov.kz](https://www.gov.kz/); https://nauka.kz; <http://kaznu.kz> ; [www.scedu.kz](http://www.scedu.kz); [https://www.ncste.kz](https://www.ncste.kz/); [www.ists.com](http://www.ists.com); [www.iaae.com](http://www.iaae.com); [www.science.com](http://www.science.com); [www.ecology.com](http://www.ecology.com); [www.sciencemag.org](http://www.sciencemag.org); [https://scholar.google.com](https://scholar.google.com/) | |

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| **Academic policy of the course in the context of university moral and ethical values** | **Academic Behavior Rules:**  All students have to register at the MOOC. The deadlines for completing the modules of the online course must be strictly observed in accordance with the discipline study schedule.  ATTENTION! Non-compliance with deadlines leads to loss of points! The deadline of each task is indicated in the calendar (schedule) of implementation of the content of the curriculum, as well as in the MOOC.  **Academic values:**  - Practical trainings/laboratories, IWS should be independent, creative.  - Plagiarism, forgery, cheating at all stages of control are unacceptable.  - Students with disabilities can receive counseling at e-mail \*\*\*\*\*\*\*@gmail.com. |
| **Evaluation and attestation policy** | **Criteria-based evaluation:**  assessment of learning outcomes in relation to descriptors (verification of the formation of competencies in midterm control and exams).  **Summative evaluation:** assessment of work activity in an audience (at a webinar); assessment of the completed task. |

**CALENDAR (SCHEDULE) THE IMPLEMENTATION OF THE COURSE CONTENT:**

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| weeks | Topic name | LO | ID | amount of hours | Maximum score | Form of Knowledge Assessment | The  Form of the lesson  / platform |

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| **Module 1 Science in the Modern World** | | | | | | | |
| 1 | **L.1** Determination of the role of Science in human society, specific features (characteristics) of modern science | LО 1 | ID 1.1  ID 1.2 | 1 |  | Overwide; Introduc-tion, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 1 | **PT 1** To discuss modern scientific achievements, especially in the fieldof Ecology and Environmental protection | LО 1 | ID 1.1  ID 1.2 | 2 | 15 | Discussion | Webinar  in ZOOM |
| 2 | **L.2** Justificationof directions and types of scientific researches. The methodology of scientific knowledge, methods of cognitions | LО 1 | ID 1.3  ID 1.4 | 1 |  | Informatio-nal lecture, visualiza-tion - PP presentation | Video lecture  in MS Teams |
| 2 | **PT 2** To describe the history development of Science and technologies in the different regions of the World (Egypt, China, Europe, Asia, etc.). To indicate main achievements in natural sciences. | LО 1 | ID 1.2  ID 1.3 | 2 | 10 | Analysis, Reports | Webinar  in ZOOM |
|  | **IWSP 1 Consultation on the implementation of IWS1** | LО 1 | ID 1.4  ID 1.5 | 1 | 5 |  | Webinar  in ZOOM |
|  | **IWS 1.** To describe the structure of natural scientific knowledge on the example of own master research. | LО 1 | ID 1.4  ID 1.5 |  |  | Logic task- schema |  |
| 3 | **L.3** The structure of scientific knowledge, specific of natural researches | LО 1 | ID 1.5 | 1 |  | Informatio-nal lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 3 | **PT 3** To classify directions, types of scientific researches and methods of scientific knowledge, including those used in the research area | LО 1 | ID 1.3  ID 1.4 | 2 | 10 | Schema,  Discussion | Webinar  in ZOOM |
| 4 | **L.4** Scientific and technological development as part of the national doctrine of Kazakhstan: strategy and legislation (R&T; R&D). Activity of the Ministry of Education and Science, National Academy of Sciences and other scientific organizations in Kazakhstan. | LО 2 | ID 2.1  ID 2.2  ID 2.5 | 1 |  | Problem lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 4 | **PT 4** Analyze thedevelopment trends in the field of research, scientific and technical activities (R&T; R&D) in Kazakhstan comparing with foreign countries. | LО 2 | ID 2.1  ID 2.2 | 2 | 10 | Analyses,  PP presenta-tions | Webinar  in ZOOM |
|  | **IWSP 2 Defense of IWS1** |  |  |  | 25 | Reports, Discussion | Webinar  in ZOOM |
| 5 | **L.5** Scientific and technical programs and their financing in the World. Principles and priorities of scientific and technical policy of the Republic of Kazakhstan (priorities in the field of natural sciences). Financing and State scientific and technical expertise of Scientific Projects. | LО 2 | ID 2.3  ID 2.4 | 1 |  | Problem lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 5 | **PT 5** Assess the advantages and disadvantages of the program-targeted method of research funding: the experience of foreign countries. Select international funds and programs to finance projects in the subject of ​​research | LО 2 | ID 2.3  ID 2.4 | 2 | 10 | Analyze, Dispute,  PP presenta-tions | Webinar  in ZOOM |
|  | **Control Work MT1.** Scientific Definitionsand Termsaccording Law RK “«About a science», 2011 |  | ID 2.1-  ID 2.5 |  | 15 |  | Webinar  in ZOOM |
|  | **MT1** |  |  |  | 100 |  |  |
| **Module П New Scientific- metric Indexes and scientific writing skills** | | | | | | | |
| 6 | **L.6 S**cientific and technical information, scientific documents. State system of scientific and technical information of the Republic of Kazakhstan, its structure and functions. Information resources of science. Scientific databases and banks, e-catalogs, libraries of NTSC RK. | LО 3 | ID 3.1 | 1 |  | Lecture – visualiza-tion – Internet search,  PP presentation | Video lecture  in ZOOM |
| 6 | **PT 6** Classify sources of scientific and technical information: books, monographs, scientific journals, conference materials, patents, Internet resources, including in the field of research | LО 3 | ID 3.1 | 2 | 10 | Reports, Work in group | Webinar  in ZOOM |
| 6 | **IWSP 3 Consultation on the implementation of IWS2** | LО 2 | ID 2.5 |  | 5 |  | Webinar  in ZOOM |
| 6 | **IWS 2** Compare the legislation in the scientific and technical sphere of the Republic of Kazakhstan and NIS countries | LО 2 | ID 2.5 |  |  | PP -presentation |  |
| 7 | **L.7** Modern Scientific metric indexes: impact-factor of journals, index Hirsh, database of referenced scientific resources - Scopus, Thomson Reuters and etc. | LО 3 | ID 3.2  ID 3.3 | 1 |  | Informatio-nal lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 7 | **PT 7** Select scientific journals according to the impact factor, including the subject area of ​​research | LО 3 | ID 3.2 | 2 | 10 | Discussion, Internet search | Webinar  in ZOOM |
| 8 | **L.8** Modern Scientific metric indexes: impact-factor of journals, index Hirsh, database of referenced scientific resources - Scopus, Thomson Reuters and etc. (continue) | LО 3 | ID3.2  ID 3.3 | 1 | 5 | Informatio-nal lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 8 | **PT 8** Evaluate the effectiveness of a researcher's scientific activity using the Hirsch index and work with modern scientific-metric databases of research activity indices (Scopus Author ID, Researcher ID, ORCID), research papers with Digital Object Identifier DOI | LО 3 | ID 3.3. | 2 | 10 | Work in pears, Internet search | Webinar  in ZOOM |
|  | **IWSP 4 Defends of IWS 2** | LО 2 | ID 2.5 |  | 20 | PP- presentation | Webinar  in ZOOM |
| 9 | **L.9** Requirements for writing abstracts, papers in scientific journals and conference proceedings and etc. | LО 3 | ID 3.4 | 1 |  | Informatio-nal lecture, visualiza-tion - PP presentation | Video lecture  in ZOOM |
| 9 | **PT 9** Compare the requirements for writing abstracts and papers in the conference proceedings , etc. | LО 3 | ID 3.4 | 2 | 10 | Analyses, Work in pears | Webinar  in ZOOM |
|  | **IWSP 5 Consultation on the implementation of IWS3** |  |  |  | 5 |  | Webinar  in ZOOM |
|  | **IWS 3** Demonstrate writing skills of scientific paper in a rating journal (Scopus, Republican rating) in the field of research for master's dissertation | LО 3 | ID 3.5 |  |  | Scientific paper |  |
| 10 | **L.10** Requirements for writing abstracts, papers in scientific journals and conference proceedings in Scopus databases in the field of natural science (continue) | LО 3 | ID 3.4 | 1 |  | Lecture "in a new way"  (by students), PP-presentation | Video lecture  in ZOOM |
| 10 | **PT 10** To prepare scientific paper in conference proceedingsin Scopus databases in the field of research | LО 3 | ID3.4 | 2 | 10 | Analysis, PP-presentation | Webinar  in ZOOM |
|  | **Control Work Mid Term.** How to search scientific metric Indexes**?** | LО 3 | ID3.1-  ID3.3 |  | 15 |  | Webinar  in ZOOM |
|  | **Mid Term** |  |  |  | **100** |  |  |
| **Module III Management Skills of Master Degree Dissertation and Scientific Project** | | | | | | | |
| 11 | **L.11** System of training scientists and high quality specialists in the Republic of Kazakhstan | LО 4 | ID 4.1 | 1 |  | Informational, PP-presentation | Video lecture  in ZOOM |
| 11 | **PT 11** Discuss the system of training scientists and high quality specialists in different countries in the World (master's degree, PhD studies, post-doctoral studies) | LО 4 | ID 4.1. | 2 | 10 | PP-presentationWork in pears and group | Webinar  in ZOOM |
|  | **IWSP 6 Defends of IWS 3** | LО 3 | ID 3.5 |  | 20 | Scientific paper | Webinar  in ZOOM |
| 12 | **L.12** Assessment of the requirements for writing master's thesis (dissertation) in the Republic of Kazakhstan | LО 4 | ID 4.2 | 1 |  | Lecture "in a new way"  (by students), PP- presentation | Video lecture  in ZOOM |
| 12 | **PT 12** Justify independent research according to the rules of the methodology: problem - subject - object - - goal - task - hypothesis - the main stages | LО 4 | ID 4.3 | 2 | 10 | Analysis | Webinar  in ZOOM |
| 12 | **IWSP 7 Consultation on the implementation of IWS4** | LО 5 | ID5.3 |  | 5 |  | Webinar  in ZOOM |
| 12 | **IWS 4** To prepare scientific project in the field of researches | LО 5 | ID5.3 |  |  | Scientific project (work in group) |  |
| 13 | **L.13** Effectively organize scientific work and plan experiments, time - management techniques for the preparation of master’s thesis (dissertation).  Substantiate research results and conclusions, recommendations for a master's dissertation. | LO4 | ID 4.4  ID 4.5 | 1 |  | Compara-tive analyses, PP-presentation | Video lecture  in ZOOM |
| 13 | **PT 13** Discuss and select advanced knowledge, ideas and reasons for learning and professional activities in the field of geographical sciences, ecology and natural resource management to achieve development goals(SDG’s) | LO5 | ID 5.1 | 2 | 10 | Dispute,  Discussion | Webinar  in ZOOM |
| 14 | **L.14** Requirements for preparing research project in the Republic of Kazakhstan (current call) | LО 5 | ID 5.2. | 1 |  | Informational, PP-presentation | Video lecture  in ZOOM |
| 14 | **PT 14** Assessment of the requirements for patenting results of researches in the Republic of Kazakhstan | LО 5 | ID 5.4. | 2 | 10 | Analysis,  PP-presentation | Webinar  in ZOOM |
| 15 | **L.15 Student’s Conference for**  **Defends of IWS 4** | LО 5 | ID 5.3. | 1 | 20 | lecture-confe-rence | Video lecture  in ZOOM |
| 15 | **PT 15** To prepare patent or license in the field of researches. | LО 5 | ID 5.5. | 2 | 15 | Applica-tions for patent and license, Work in group, PP-presentation | Webinar  in ZOOM |
|  | **MT2** |  |  |  | **100** |  |  |

[Abbreviations: QS - questions for self-examination; TK - typical tasks; IT - individual tasks; CW - control work; MT - midterm.

Comments:

- Form of L and PT: webinar in MS Teams / Zoom (presentation of video materials for 10-15 minutes, then its discussion / consolidation in the form of a discussion / problem solving / ...)

- Form of carrying out the CW: webinar (at the end of the course, the students pass screenshots of the work to the monitor, he/she sends them to the teacher) / test in the Moodle DLS.

- All course materials (L, QS, TK, IT, etc.) see here (see Literature and Resources, p. 6).

- Tasks for the next week open after each deadline.

- CW assignments are given by the teacher at the beginning of the webinar.]

**Dean V.Gr. Salnikov**

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