**SYLLABUS**

**Fall semester 2023-2024 academic year.**

**Educational program *6B05103 Биотехнология, дневная,***

***course (Autumn )***

*7M05109 Биотехнология, дневная*

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| **ID** **and name** **of course** | **Independent work** **of the student****(IWS)** | **Number of credits** | **General****number** **of credits** | **Independent work** **of the student****under the guidance** **of a teacher (IWST)** |
| **Lectures (L)** | **Practical classes (PC)** | **Lab. classes (LC)** |
| Biotechnology of agricultural plants SRT 5206  | The number of IWS is 5.  | 3 | 3 |  |  | The number ofIWST is 6-7.This is a teacher's guide.for the preparation of the IWS.  |
| **ACADEMIC INFORMATION ABOUT THE COURSE** |
| **Learning Format** | **Cycle,****component** | **Lecture** **types** | **Types** **of practical classes** | **Form and platform final control** |
| *Choose**Offline/online/**hybrid* | Selectable Component  | Offline  | Offline | Univer standart  |
| **Lecturer - (s)** | Kenzhebayeva Saule Sagindykovna  |
| **e-mail :** | Saule.Kenzhabaeva@kaznu.edu.kz |
| **Phone :** |  |
| **Assistant - (s)** |  |
| **e-mail :** |  |
| **Phone :** |  |
| **ACADEMIC COURSE PRESENTATION**. |
| **Purpose****of the course** | **Expected Learning Outcomes (LO) \***  | **Indicators of LO achievement (ID)** |
| To acquaint students with the features of physiological basis of plants productivity and key physiological processes affecting crop plants productivity, to show their relationship with environmental conditions. | * 1. To demonstrate knowledge about the features of biotechnology of agricultural plants and key metabolism of the most important biological processes of living organisms; the main processes occurring in the plant during growth and development, and their interaction, as well as the response of plants to adverse conditions importance of increase in agricultural productivity in terms of optimisation of  physiological processes
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 | 1.1. know the conceptual apparatus necessary for the successful development of the discipline “biotechnology agricultural plants” and the major elements of the global significance of biotechnology, the categories of biotechnology processes and products, and in the context of "traditional" vs "modern" biotechnology processes;1.2. analyze the biological functions of the most important cell compounds and the key mechanisms of plants during growth and development that will be used in biotechnology;1.3. finds a correspondence between the properties of most important biological compounds, their biological functions and an area of apllcations;1.4. demonstrates knowledge of the most important metabolic processes of a living organism for their improvement;1.5. based on lecture material and information sources, can write schemes of various biological processes with emphasasis of better manupulation, describe the mechanism of their biochemical and physiological action on a living organism and the points for improvement. |
|  |
| 2. to choose and apply in practice modern methods of biochemical and physiological research for the qualitative and quantitative analysis of biological material; and apply the basic methods used in various fields of biotechnology of agricultural plants  | 2.1. conducts information search to solve research problems;2.2. formulates research objectives and plans the process of its implementation; prepares equipment (instruments, apparatus) for conducting experiments;2.3. selects and prepares samples (plants material) for the experiment;2.4. conductasion of a qualitative and quantitative analysis of biological material, according to methodological recommendations in accordance with requirement of biotechnology of agricultural plants ; |
| 3. to acquire fundamental knowledge about the agricultural biotechnology, methods and purposes of their use; to interpret the results of biochemical and physiological experiments, evaluating the relationship between the physiological functions of biomolecules and their application for biotechnology;  | 3.1. fundamental knowledge about the nature of GMOs, methods and purposes of their creation,3.2. State the broad categories of biotechnological processes based on the products formed and/or the process or substrates used, and have detailed knowledge of examples of each of these;3.2. the assesment of the diverse applications of biotechnology to medical science and agriculture.3.3. interpretation and analysisof the results while conducting experiments with plants, contextualization of the various approaches and methods used in biotechnology of agricultural plants; 3.4. the personal, professional and social competencies such as creativity,criticality, social responsibility. |
| 3.5. makes final conclusions from the data obtained; |
| 4. to get knowledge of terms will form the basis for successful development subsequent topics of the studied disciplines, the key process engineering technologies appropriate to the biotechnology industry, to emphasize the role of microorganisms, plants and animals as the basis for classical and molecular biotechnology, and to inform students of the diverse applications of biotechnology to medical science and agriculture. |  |
| 4.1. modification of chemical composition in transgenic food4.2 improvement in technological and utility trends. 4.3. genetic transformation is alterations in functional traits, important in the technlogical and processing processes. |
| 5. to get knowledge of terms will form the basis for successful development subsequent topics of the studied disciplines, the key process engineering technologies appropriate to the biotechnology industry, to emphasize the role of microorganisms, plants and animals as the basis for classical and molecular biotechnology, and to inform students of the diverse applications of biotechnology to medical science and agriculture. | 5.1. the knowledge which will form the basis for successful development subsequent topics of the biotechnology of agricultural plants; 5.2 the molecular biotechnology when creating GMOs, a person fundamentally changes the speed and the scale of such processes, which cannot but change the pace evolutionary process and lead to unpredictable results;5.3. understanding the role of microorganisms, plants and animals as the basis for classical and molecular biotechnology. |
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| **Prerequisites** | Plant anatomy and morphology, Cytology and histology, Plants physiology |
| **Postrequisites** | Biotechnology of agricultural plants, Regulation of physiological processes of plants productivity, Agronomy, Agriculture  |
| **Learning Resources** | **Literature:** main, 1. Reinhard Renneberg. *Biotechnology for Beginners [2007]. ISBN:*

97801237358121. Gladys Alexandre and etc. Advances in applied microbiology [2009]. ISBN: 978-0-12-374788-4
2. Gareth Price. Biology: An Illustrated Guide to Science [2006]. ISBN-10: 0- 8160-6162-9
3. Talaro-Talaro: Foundations in Microbiology, Fourth Edition [2011]. ISBN: 978-0072320428
4. Ditchenko T.I. Culture of plants’cells, tissue and organs: Methodical recommendations for laboratory studies, tasks for independent work and control of students' knowledge – Minsk: BGU, 2007. – 46 p.
5. Glik, B., Pasternak J. Molecular biotechnology. Principles and applications.- M.: “Mir”, 2002. - 589 p.

 **Additional:**1. Eugene W. Nester and etc. Microbiology: a human perspective, sixth edition [2011]. ISBN 978–0–07–299543–5
2. Prescott, Harley, and Klein’s microbiology, seventh edition [2008]. ISBN 978–0–07–299291–5
3. Nathan S. Mosier, Michael R. Ladisch. Modern biotechnology: connecting innovations in microbiology and biochemistry to engineering fundamentals [2009]. ISBN 978-0-470-11485-8
4. Tortora, Gerard J. Microbiology: an introduction [2010]. ISBN-13: 978-0- 321-55007-
5. Madsen, Eugene L. Environmental microbiology [2008].ISBN-13: 978-1- 4051-3647-
6. T.A. Egorova, S.M. Klunova, E.A. Zhivukhin. Fundamentals of biotechnology: a tutorial. - Moscow: "Academy", 2003. - 208 р.
7. Pershina L.A. Cultivation of isolated cells and tissues of higher plants: a textbook. Part 1. - Novosibirsk: NSU, 2000. – 46 р.

**Research infrastructure**1. Laboratories and other locations where teaching and learning will take place2.**Professional scientific databases**1.genbank database2 **.****Internet resources** 1 . **Internet resources:**Internet resources (at least 3-5)1. http://elibrary.kaznu.kz/ru2. https://doi.org/10.1016/j.jneb.2020.01.0133. http://www.plantdesigns.com/4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4484336>5. https://[www.sciencedirect.com/science/article/pii/S](http://www.sciencedirect.com/science/article/pii/S)  2666675820300175**Software**  |

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| **Academic****course policy** | The academic policy of the course is determined by [the Academic Policy](https://univer.kaznu.kz/Content/instructions/%D0%90%D0%BA%D0%B0%D0%B4%D0%B5%D0%BC%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%B0%D1%8F%20%D0%BF%D0%BE%D0%BB%D0%B8%D1%82%D0%B8%D0%BA%D0%B0.pdf) and [the Policy of Academic Integrity of Al-Farabi Kazakh National University .](https://univer.kaznu.kz/Content/instructions/%D0%9F%D0%BE%D0%BB%D0%B8%D1%82%D0%B8%D0%BA%D0%B0%20%D0%B0%D0%BA%D0%B0%D0%B4%D0%B5%D0%BC%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%BE%D0%B9%20%D1%87%D0%B5%D1%81%D1%82%D0%BD%D0%BE%D1%81%D1%82%D0%B8.pdf) Documents are available on the main page of IS Univer .**Integration of science and education.** The research work of students, undergraduates and doctoral students is a deepening of the educational process. It is organized directly at the departments, laboratories, scientific and design departments of the university, in student scientific and technical associations. Independent work of students at all levels of education is aimed at developing research skills and competencies based on obtaining new knowledge using modern research and information technologies. A research university teacher integrates the results of scientific activities into the topics of lectures and seminars (practical) classes, laboratory classes and into the tasks of the IWST, IWS, which are reflected in the syllabus and are responsible for the relevance of the topics of training sessions andassignments.**Attendance.** The deadline for each task is indicated in the calendar (schedule) for the implementation of the content of the course. Failure to meet deadlines results in loss of points.**Аcademic honesty.** Practical/laboratory classes, IWS develop the student's independence, critical thinking, and creativity. Plagiarism, forgery, the use of cheat sheets, cheating at all stages of completing tasks are unacceptable.Compliance with academic honesty during the period of theoretical training and at exams, in addition to the main policies, is regulated by [the "Rules for the final control"](https://univer.kaznu.kz/Content/instructions/%D0%9F%D1%80%D0%B0%D0%B2%D0%B8%D0%BB%D0%B0%20%D0%BF%D1%80%D0%BE%D0%B2%D0%B5%D0%B4%D0%B5%D0%BD%D0%B8%D1%8F%20%D0%B8%D1%82%D0%BE%D0%B3%D0%BE%D0%B2%D0%BE%D0%B3%D0%BE%20%D0%BA%D0%BE%D0%BD%D1%82%D1%80%D0%BE%D0%BB%D1%8F%20%D0%9B%D0%AD%D0%A1%202022-2023%20%D1%83%D1%87%D0%B3%D0%BE%D0%B4%20%D1%80%D1%83%D1%81%D1%8F%D0%B7%D1%8B%D0%BA%D0%B5.pdf) , ["Instructions for the final control of the autumn / spring semester of the current academic year"](https://univer.kaznu.kz/Content/instructions/%D0%98%D0%BD%D1%81%D1%82%D1%80%D1%83%D0%BA%D1%86%D0%B8%D1%8F%20%D0%B4%D0%BB%D1%8F%20%D0%B8%D1%82%D0%BE%D0%B3%D0%BE%D0%B2%D0%BE%D0%B3%D0%BE%20%D0%BA%D0%BE%D0%BD%D1%82%D1%80%D0%BE%D0%BB%D1%8F%20%D0%B2%D0%B5%D1%81%D0%B5%D0%BD%D0%BD%D0%B5%D0%B3%D0%BE%20%D1%81%D0%B5%D0%BC%D0%B5%D1%81%D1%82%D1%80%D0%B0%202022-2023.pdf) , "Regulations on checking students' text documents for borrowings".Documents are available on the main page of IS Univer .**Basic principles of inclusive education.** The educational environment of the university is conceived as a safe place where there is always support and equal attitude from the teacher to all students and students to each other, regardless of gender, race / ethnicity, religious beliefs, socio-economic status, physical health of the student, etc. All people need the support and friendship of peers and fellow students. For all students, progress is more about what they can do than what they can't. Diversity enhances all aspects of life.All students, especially those with disabilities, can receive counseling assistance by phone / e- mail Saule.Kenzhabaeva@kaznu.edu.kz *contacts* or via video link in MS Teams *enter a permanent link to the meeting.***Integration MOOC (massive open online course).** In the case of integrating MOOC into the course, all students need to register for MOOC. The deadlines for passing MOOC modules must be strictly observed in accordance with the course study schedule. **ATTENTION!** The deadline for each task is indicated in the calendar (schedule) for the implementation of the content of the course, as well as in the MOOC. Failure to meet deadlines results in loss of points. |
| **INFORMATION ABOUT TEACHING, LEARNING AND ASSESSMENT** |
| **Score-rating letter system of assessment of accounting for educational achievements** | **Assessment Methods** |
| **Grade** | **Digital****equivalent****points** | **points,****% content** | **Assessment according to the traditional system** | **Criteria-based assessment** is the process of correlating actual learning outcomes with expected learning outcomes based on clearly defined criteria. Based on formative and summative assessment.**Formative assessment is** a type of assessment that is carried out in the course of daily learning activities. It is the current measure of progress. Provides an operational relationship between the student and the teacher. It allows you to determine the capabilities of the student, identify difficulties, help achieve the best results, timely correct the educational process for the teacher. The performance of tasks, the activity of work in the classroom during lectures, seminars, practical exercises (discussions, quizzes, debates, round tables, laboratory work, etc.) are evaluated. Acquired knowledge and competencies are assessed.**Summative assessment** -type of assessment, which is carried out upon completion of the study of the section in accordance with the program of the course.Conducted 3-4 times per semester when performing IWS. This is the assessment of mastering the expected learning outcomes in relation to the descriptors. Allows you to determine and fix the level of mastering the course for a certain period. Learning outcomes are evaluated. |
| A | 4.0 \_ | 95-100 | Great |
| A- | 3.67 | 90-94 |
| B+ | 3.33 | 85-89 | Fine |
| B | 3.0 | 80-84 | **Formative and summative assessment**The teacher introduces his own types of assessment or uses the proposed option | **Points % content**The teacher enters his score into points in accordance with the calendar (schedule).The exam does not changeand the final score in the course. |
| B- | 2.67 | 75-79 | Activity at lectures | 5 |
| C+ | 2.33 | 70-74 | Work in practical classes | 20 |
| C | 2.0 | 65-69 | Satisfactorily | Independent work | 25 |
| C- | 1.67 | 60-64 | Design and creative activity | 10 |
| D+ | 1.33 | 55-59 | Unsatisfactory | Final control (exam) | 40 |
| D | 1.0 | 50-54 | TOTAL | 100 |
| **Calendar (schedule) for the implementation of the content of the course. Methods of teaching and learning.** |

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| **A week** | **Topic name** | **Number of hours** | **Max.****ball** |
| **MODULE 1** 1 Introduction to agriculturalPlant Biotechnology. Cellular approaches  |
| **1** | **Lecture 1.** (**L.1**.) Theme Introduction. The aim of Plant biotechnology. Basic direction in Plant biotechnology. Cell technologies for receiving important BAS derived from plant materials.mportance of agricultural productivity, its main components  Main internal factors affecting on productivity | **2** | **0** |
| **PC 1.**  Food security is one of major concerns for the growing global population Practical applications of plant tissue culture. Show the examples for the different plant species  | 1 | 10 |
| **L.2** Micropropagation technologies of plants. Technology for production of virus-free plants |  |  |
| **PC 2.** Theme The cellularr biotechnology used for improvement of important agricultural plants traits. Practical applications of seed culture and embryo culture. Show the examples for the plant species.. | 1 | 10 |
| **LC 2.** Theme… |  |  |
| **IWS P 1.** Consultations on the implementation of **IWST 1**ATTENTION. Number of IWST (6-7), IWS (2-5 ) for 15 weeksApplications of plant tissue culture for improving the yield. Show the examples for the different agricultural plants. Applications of plant tissue culture for improving quality characteristics. Show the examples for the different agricultural plants. Applications of plant tissue culture for increasing tolerance to abiotic stresses. Show the examples for the different agricultural plants. Applications of plant tissue culture for increasing resistance o biotic stresses (fungi, pathogen microorganisms, viruses). Show the examples for the different agricultural plants. How to produce the clones of plants. Practical applications of callus culture. Show the examples for the different plant species Practical applications of organ culture. Show the advantages and limitations, the examples of plants.Practical application of the somatic embryogenesis Describe the functions of each components of culture medium in vivo. How to regulate its composition.Describe Organogenesis. | **2** | **20** |
| **3** | **L 3.** Theme Cell engineering of plants. Cell selection | **2** | **0** |
| **PC 3.** Theme Different breeding techniques and its requirement for improvement of agricultural plants Somatic Embryogenesis Major Steps of Tissue Culture. | 1 | 10 |
| **LC 3.** Theme… |  |  |
| **IWST 1.** Control work, test, individual / group project, essay, situational task, testing, portfolio, etc. at the teacher's choice. |  |  |
| **4** | **L 4.** Theme Selection of Somatic Hybrids: Strategies and using this approach in agricultural plants biotechnology | **2** | **0** |
| **PC 4.** Theme Production of vitamins and biological active compounds by plants | 1 | 10 |
| LC 4. Theme…  |  |  |
| **5** | **L 5.** Theme Methods of Fertilization in vitro. Haploid technology. The importance of GM crops for food security. | **2** | **0** |
| **PC 5.** Theme GM crops as food and feed products**.** Methods of recombinant DNA and Fertilization in vitro. Haploid technology for improvement of agricultural traits | 1 | 10 |
| **LC 5.** Theme … |  |  |
| **MODULE 2 Title .** **Main approaches** **used for biotechnology of Agricultural plants** |
| **6** | **L 6.** Theme. The molecular biotechnology used for creation GMOs |  |  |
| **PC 6.** Theme... The features of biochemistry and physiology of growth and metabolism of microorganisms in terms of practical agricultural biotechnology. |  |  |
| **LC 6.** Theme.. |  |  |
| **IWST 2.** Consultations on the implementation of **IWS 2** Show examples of sexual reproduction: naturalGive practical examples of selective breeding, Describe the process of hybridizationDescribe the gene splicing, Show practical applications recombinant DNA technologyShow examples of genetically modified microorganismsHow to use the restriction enzymes to make recombinant DNADescribe the protocol of preparation of vector DNADescribe *the main principles of choice of host organism*For what purpose the vector is used? What is a human artificial chromosomeGive practical examples of a bacterial artificial chromosomeDescribe using bacteriophages and cosmid for development of agricultural plants Give practical examples of yeast artificial chromosomes (YACs)Give practical examples of use of plasmidsHow to choice the host cells for replication of recombinant DNADrought Resistance by Engineering Plant Tissue-Specific Responses. Stomatal-Mediated Drought Responses. Cuticular Wax Production. Carbon Allocation. Root Traits. Transforming C3 crops into C4.  | 1 | **20** |
| **7** | **L 7.** Theme Major Traits Contributing to drought Resistance | **2** | **0** |
| **PC 7.** Theme Droplet digital PCR (ddPCR) technologies and SGS technologies to develop of GM crops. Strategies to increase agricultural production | 1 | 10 |
| **LC 7.** Theme. Theme. Eeffect of **s**oil salinity, Floods and acidity stress on crop productivity.. |  |  |
| **IWST 2.** Screening Techniques for Drought resistance in plants. Main photosyntetical parameters used for evaluation the tolerant genotypes. Organic farming practices. Process of organic farming practices. Organic farming techniques. Effects of regulation of organic plant production.Organic pesticides. Microbiological hazards. Advantages and disadvantages of organic agriculture and products  | **NT** |  |
| **Midterm control 1** | **100** |
| **8** | **L 8.** Theme.. Plant mutation breeding for improvement of agricultural plants. Main principles and benefits y | **2** | **0** |
| **PC 8.** Theme. Crop improvement using mutation breeding. | 1 | 10 |
| **LC 8.** Theme  |  |  |
| **IWST 3.** Consultations on the implementation of **IWS 2**. Mechanisms of salinity tolerance. Integrated physiological response to salinity. Effect of salinity stress on oxidative stress Effect of salinity stress on plant development. Genetic engineering strategies for abiotic stress tolerance. Drought and salinity tolerance. Physiological bases of plant resistance to drought. Phosphate starvation in plants. Effect of salinity stress on plant development | **1** | **20** |
| **9** | **L 9.**  Genes and traits of interest for crops | **2** | **0** |
| **PC 9.** Theme. Combination of advances in functional genetics, proteomics and bioinformatics e | 1 | 10 |
| **LC 9.** Subject... |  |  |
| **10** | **L 10.** Theme Selection of agricultural plantsusing DNA m arkers MAS -marker-assisted selection | **2** | **0** |
| **PC 10.** Theme. Characterization and use of different molecular markers for crops.DNA molecular markers in plant breeding: current status and recent advancements in genomic selection and genome editing. Biochemical and molecular markers in plant breeding for drought and salinity tolerance. | 1 | 10 |
| **LC 10.** Theme... |  |  |
| **IWST 4.** Consultation on the implementation **of IWS 3** | **1** | **20** |
|  |  |  |
| **MODULE 3 Title** **Integration of microorganisms and plant systems for food security** |
| **11** | L 11. Theme. The main directions and tasks for integration of microorganisms and plant systems for food security  | **2** | **0** |
| **PC 11.** Theme. Major advanced in development of agricultural plants with new symbiotic and antibiotic interactions between plants and microorganisms. Phytomicrobiome for promoting sustainable agriculture and food security: Opportunities, challenges, and solutions. | 1 | 10 |
| **LC 11**. Theme... |  |  |
| **IWST** **3**. Screening techniques for pest and disease resistance. Field Screening. Laboratory Screening. Screening Techniques for Diseases Resistance. Types of molecular markers. Marker assisted selection (MAS) for disease resistance and quality traits |  |  |
| **12** | L12. Theme. Engineering drought and salinity tolerance traits in crops through CRISPR-mediated genome editing: Targets, tools, challenges, and perspectives | **2** | **0** |
| **PC 12.** Theme. The examples for creation ofagricultural plants with new antagonistic interactions between plants and fungi, bacteria, and insects. | 1 | 10 |
| **LC 12.** Theme... |  |  |
| **With RO 3.** |  |  |
| **13** | **L 13.** Theme. Biotechnology of agricultural plantsusing for improved nutritional content | **2** | **0** |
| **PC 13.** Theme. The approaches to increase plants productivity through manipulation of reactive oxygen species metabolism and antioxidant defense under stress. | 1 | 10 |
| **LC 13.** Theme... |  |  |
| **IWST 5.** Consultation on the implementation **of IWST 4.** The modern approaches of genetic engineering in plants biotechnology: constructing of genes for expressing in plant cells, selectable markers, methods of introducing the foreign DNAs into cells, identification of the foreign DNA in transformed cells and organisms, determination of the expression pattern of the foreign DNA and the direction for application to improve valuable traits. |  | **20** |
| **14** | L 14. Theme. Marker assisted selection in crop plants | **2** | **0** |
| PC 14. Theme. Development of Biofortified Crops Through CRISPR-Cas Genome Editing Approach. | 1 | 10 |
| **LC 14.** Theme... |  |  |
| **15** | **L 15.** Theme. Organic farming. Strategies to overcome crop yield reduction. Development of new adapted crop genotypes | **2** | **0** |
| **PC 15.** Theme. Marker-assisted selection (MAS) and genome wide associated studies (GWAS) to increase the valuable traits of agricultural plants  | 1 | 10 |
| **LC 15.** Theme... |  |  |
| **IWST 4.** Zn-Enriched Crops, Biofortification Through TargetingCytokinin Metabolism plants absorb a range of mineral elements, Quality Improved Crops, Vitamin A Enriched Crops, Production of antibodies in plants biotechnology. Production of hormonal drugs in plants biotechnology. Transgenic plantss - as models of human diseases. Monitoring the use of biotechnological methods. Ethical policy gene therapy germ and somatic cells . Ethical policy on human cloning. |  |  |
| **Midterm control 2** | **100** |
| **Final control (exam)** | **100** |
| **TOTAL for course** | **100** |

**Dean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Zaydan B.K.**

**Head of Department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Kistaybayeva A.S.**

**Lecturer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Kenzhebayeva S.S.**

**RUBRICATOR OF THE SUMMATIVE ASSESSMENT**

**CRITERIA EVALUATION OF LEARNING OUTCOMES**

Issued at the request of the teacher for each planned summative assessment (IWST)

**TEMPLATE**

**Task name** (points, % content from 100% MC, copy from the calendar (graphics) implementation of the content of the training course, methods of teaching and learning

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| --- | --- | --- | --- | --- |
| **Criterion**   | **"Excellent"**  **Max. weight in %**  | **"Good"**  **Max. weight in %**  | **"Satisfactory"**  **Max. weight in %**  | **"Unsatisfactory"**  **Max. weight in %**  |
|    |    |    |    |    |

**Example 1. Written assignment "My professional history" (25% of 100% MC)**

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| **Criterion**  | **"Excellent"**20-25% | **"Good"**15-20% | **"Satisfactory"**10-15% | **"Unsatisfactory"**0-10% |
| **Understanding Theories** **and concepts of professional identity and professionalism of a teacher**   | Deep understanding of theories, concepts of professional identity and teacher professionalism. Relevant and relevant links (citations) to key sources are provided.  | Understanding theories, concepts of professional identity and teacher professionalism. Links (citations) to key sources are provided.  | Limited understanding of theories, concepts of professional identity and teacher professionalism. Limited references (citations) to key sources are provided.  | Superficial understanding / lack of understanding of theories, concepts of professional identity and professionalism of the teacher. Relevant references (citations) to key sources are not provided.  |
| **Awareness of key issues of professional identity and professionalism of teachers in Kazakhstan**   | Links well the key concepts of professional identity and teacher professionalism with the context of Kazakhstan. Excellent substantiation of arguments with evidence from empirical research (for example, based on interviews or statistical analysis).  | Links the concepts of professional identity and teacher professionalism with the context of Kazakhstan. Supports arguments with evidence from empirical research.  | Limited connection of the concepts of professional identity and professionalism of teachers with the context of Kazakhstan. Limited use of evidence from empirical research.  | There is little or no connection between the concepts of a teacher's professional identity and the context of Kazakhstan. Little or no use of empirical research.  |
| **Policy proposal or practical recommendations/suggestions**   | Offers sound policy and/or practical recommendations, proposals for improving the professional identity and professionalism of teachers in Kazakhstan.  | Offers some policy and/or practical recommendations, proposals for enhancing the professional identity and professionalism of teachers in Kazakhstan  | Limited policy and practical recommendations. Recommendations are non-essential, not based on rigorous analysis, and are shallow.  | Little or no policy and practice advice, or advice of very low quality.  |
| **Letter,**  **APA style**   | The writing demonstrates clarity, conciseness and correctness. Strictly follows the APA style.  | The letter demonstrates clarity, conciseness and correctness. Basically follows the APA style.  | The letter has some key errors and clarity needs to be improved. There are mistakes in following the APA style.  | The writing is unclear, it is difficult to follow the content. Lots of mistakes in following the APA style.  |

   **Example 2. Group presentation "Teaching profession in Kazakhstan" (30% of 100% RK)**

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| --- | --- | --- | --- | --- |
| **Criterion**  | **"Excellent"** 25-30% | **"Good"** 20-20% | **"Satisfactory"** 15-20% | **"Unsatisfactory"** 0 – 15% |
| **Understanding theories and concepts of the professional identity of the teacher and the teaching profession**   | Deep understanding of theories, concepts of the professional identity of the teacher and the teaching profession.  | Understanding theories, concepts of the professional identity of the teacher and the teaching profession.  | Limited understanding of theories, concepts of the professional identity of the teacher and the teaching profession.  | Superficial understanding / lack of understanding of theories, concepts of the professional identity of the teacher and the teaching profession.  |
| **Awareness of key issues of the professional identity of the teacher and the teaching profession in Kazakhstan**   | Competent correlation of the key concepts of the professional identity of the teacher and the teaching profession with the context of Kazakhstan. Excellent substantiation of arguments with evidence from empirical research (for example, based on interviews or statistical analysis).  | There is a connection between the concepts of professional identity of a teacher and the teaching profession with the context of Kazakhstan. The arguments are backed by evidence from empirical research.  | Limited correlation of the professional identity of the teacher and the concepts of the teaching profession with the context of Kazakhstan. Limited use of evidence from empirical research  | Insignificant connection / lack of connection between the concepts of the teacher's professional identity and the context of Kazakhstan. Little or no empirical research is used.  |
| **Pilot Study**   | Excellent use of the results of pilot studies (interviews or surveys) in the presentation  | Good use of the results of pilot studies (interviews or surveys) in the presentation.  | Satisfactory use of the results of pilot studies (interviews or surveys) in the presentation.  | Poor use of the results of pilot studies (interviews or surveys) in the presentation.  |
| **Suggestion of policy or practical recommendations/suggestions**   | Offers very good policy and/or practical advice or suggestions for improving the professional identity and teaching profession in Kazakhstan.  | Offers some policy and/or practical recommendations or suggestions for improving the professional identity and teaching profession in Kazakhstan.  | Limited policy and practical recommendations. Recommendations are non-essential, not based on rigorous analysis, and are shallow.  | Little or no policy and practice advice, or advice of very low quality.  |
| **Presentation,** **teamwork**   | Excellent, attractive presentation, excellent quality of visuals, slides, materials, excellent teamwork.  | Good engagement, good quality visuals, slides or other materials, good teamwork.  | Satisfactory level of involvement, satisfactory quality of materials, satisfactory level of teamwork.  | Low engagement, low quality content, poor teamwork.  |