



Psychology of Scientific and Technical Creativity

Work Program of the Discipline (Syllabus)

Details of the Discipline

Level of higher education	<i>Third (educational and scientific)</i>
Field of knowledge	<i>05 Social and behavioral sciences</i>
Specialty	<i>053 Psychology</i>
Educational and scientific program	<i>Psychology</i>
Status of discipline	<i>Normative</i>
Form of study	<i>full-time / remote</i>
Course and semester	<i>2nd year, spring (second) semester</i>
The scope of the discipline	<i>2 credits ECTS / 60 hours</i>
Semester control / control measures	<i>Exam</i>
Lessons schedule	<i>Lectures: Thursday 10.25-12.00 (1st week) Practical training: Thursday 10.25-12.00 (2nd week)</i>
Language of study	<i>Ukrainian</i>
Information about course leader / teachers	<i>Professor, Doctor of Psychological Sciences, Lozhkin Georgiy Volodymyrovych, lozhkin.heorhii@iit.kpi.ua, +380507165760</i>
Course placement	

Curriculum of the Discipline

1. Description of the Discipline, its Purpose, Subject of Study and Learning Outcomes

The subject of the discipline "Psychology of scientific and technical creativity" are psychological patterns of creative activity, manifested in the fields of science and technology. "Psychology of scientific and technical creativity" is a branch of scientific psychology that studies the components creative activities that encourage, direct, regulate and implement in the executive actions of creative activity of the subject, as well as creativity as a creative property of the individual. Creative activity is considered to be one that involves innovation - the creation of qualitatively new ideas or things still unknown humanity or the improvement of those that already exist.

In accordance with the requirements of the educational and professional program, the purpose of the discipline is the formation of graduate students:

- ability to navigate in the philosophical and methodological level of the problem of creativity;
- ability to analyze fundamental theories and concepts, information about patterns emergence and development of innovations in the process of scientific and technical activities;
- ability to identify features of the application of cognitive processes in creative activities, to track the influence of mental properties of the individual on the process of creative activity and its efficiency;
- ability to identify patterns of creative self-realization of the individual in scientific and technical spheres;
- ability to develop a psychologically sound system of influences on the development of creative qualities personality.

The educational base of the discipline "Psychology of scientific and technical creativity" is knowledge, obtained in the study of various courses aimed at revealing the general patterns and mechanisms of professional activity, as well as the formation of skills to scientifically explain psychological facts.

According to the requirements of the educational and scientific program, postgraduate students after mastering the discipline must demonstrate the following learning outcomes:

knowledge:

- philosophical and methodological context of the psychological problem of creativity, leading theoretical models of creativity, the creative nature of human self-determination (ZN 12);
- psychological mechanisms of the main creative mental processes: imagination, thinking, intuition, the main stages of the creative process, levels of creative activity and creative typologies giftedness (ZN 13);
- leading psychological technologies for the development of creative talent in science and technology (ZN 17);

skills:

- to analyze creative activity as a process and as a level system, to analyze complex ones forms of creative activity in technology and science (UM 1);
- to apply psych diagnostic techniques to study creative talent personality and assess the degree of originality of the products of creative activity (UM 8);
- to reflect on their own strategies of creative activity (UM 9).

As a result of mastering the discipline, postgraduate students will be able to:

- conduct research at the appropriate level (LC 10);
- conduct critical analysis, evaluation and synthesis of new and complex ideas and social psychological phenomena (LC 2);
- be aware of the need and compliance with the norms of scientific ethics (LC 5);
- develop and manage research projects, make proposals for funding scientific research (LC 6);
- initiate and take responsibility for innovative integrated local projects (regional) and / or national importance (FC 3);
- apply modern information technologies in various types of professional and scientific innovation activity (FC 7);
- innovatively rethink and apply methods of other fields of knowledge for implementation tasks of interdisciplinary psychological research (FC 8);
- use modern methods and technologies of scientific communication in Ukrainian and abroad languages (FC 10);
- independently perform research activities in the field of knowledge "Social and behavioral science" using modern theories, methods and information and communication technologies (FC 15).

Communication with the teacher is possible and will be encouraged in the classroom, as well as in within two hours of consultations with the teacher, which are held according to the schedule available on the site Department of Psychology and Pedagogy. In addition, for more effective communication in order to understand the structure of the discipline and the assimilation of the material uses e-mail, Telegram messenger.

2. Requisites and Post Requisites of the Discipline (Place in the Structural and Logical Scheme of Education According to the Relevant Educational Program)

To study the discipline of a graduate student, it is desirable to have the skills to use a text editor on the computer, skills of work with electronic databases of scientific institutes and libraries.

The discipline is studied after mastering the disciplines "Philosophical principles of scientific activity" and "Foreign language for scientific activity", "Theoretical and methodological problems of psychology", "Methodology of scientific research", "Psychology of social phenomena", included in the cycle compulsory (normative) disciplines of the educational program.

3. The Content of the Discipline

Full-time

List of Topics	Number of hours			
	Hours in total	Allocation of time by the type of class		
		Lectures	Seminars (Practical training)	Independent work
1	2	3	4	5
Topic 1. Psychology of creativity as a branch of psychological knowledge	6	2	-	4
Topic 2. Philosophical and methodological basis of the psychology of creativity	6	-	-	6
Topic 3. Classical concepts in the psychology of creativity	8	-	-	8
Topic 4. Leading concepts in modern psychology of creativity	4	-	-	4
Topic 5. Psychological characteristics of the creative process	8	-	-	8
Topic 6. Creative potential of the individual	8	-	2	10
Topic 7. Psychology of scientific creativity	4	-	-	4
Topic 8. Psychology of technical creativity	8	-	-	8
Topic 9. Theory of solving inventive problems	8	-	-	8
Total amount of hours	60	2	2	56

4. Educational Literature and Resources

For the successful study of the discipline it is enough to study the educational material, which is taught in lectures, as well as to get acquainted with:

4.1 Basic Literature:

1. Volianiuk N.Iu. Psykholohiia naukovoï diialnosti: [Monohrafiia] / N.Iu. Volianiuk, H.V. Lozhkin, A.B. Kolosov, B.V. Andriitsev. Kyiv: KPI im. Ihoria Sikorskoho; Tsentri DZK, 2020. 352 s. [in Ukrainian].
2. Osnovy psykholohii: Pidruchnyk / Za zahal. red. O.V. Kyrychuka, V.A. Romentsia. – K.: Lybid, 1995. – 632 s. [in Ukrainian].
3. Ponomarev Ya.A. Psihologiia tvorchestva. – M.: Nauka, 1976. – 304 s. [in Russian].
4. Romenets V.A. Psykholohiia tvorchosti. – K.: Lybid, 2001. – 288 s. [in Ukrainian].

4.2 Support Literature:

1. Volyanyuk N.Yu. Tvorcheskie sposobnosti kak individualnyiy resurs kvalifitsirovannogo sportsmena / N.Yu.Volyanyuk, A.B.Kolosov, G.V.Lozhkin // Vestnik KAZNU. Seriya Psihologii i sotsilogii. – Tom 4. – # 63. – S. 68-78. [in Russian].
2. Volyanyuk N.Yu. Psihologicheskiy potentsial i bareryi innovatsionnoy aktivnosti sub'ekta nauchno-pedagogicheskoy deyatel'nosti / N.Yu. Volyanyuk, G.V.Lozhkin // Naukovo-praktichniy zhurnal «Nauka I osvita» PivdennoukraYinskogo natsionalnogo pedagogichnogo unversitetu Imeni K.D.Ushinskogo. – # 11. – 2016. – S. 17-24. [in Russian].
3. Levi-Stros K. Mifologiki: Syiroe i prigotovlennoe. M.: ID «Flyuid», 2006. -399 s. [in Russian].
4. Kun T. Struktura nauchnyih revolyutsiy: Per s angl. / T.Kun; Sost. V.Yu.Kuznetsov. – M.: OOO «Izdatelstvo AST», 2003. – 605 s. [in Russian].
5. Lozhkin G. V. Prakticheskaya psihologiya v sistemah «chelovek-tehnika» : ucheb. posobie / G. V. Lozhkin, N. I. Povyakel. – K. : MAUP, 2003. – 296 s. [in Russian].
6. Ovsyaniko-Kulikovskiy D.N. Voprosyi psihologii tvorchestva: Pushkin. Geyne. Chehov. K psihologii myisli i tvorchestva. – M.: Izd. LKI, 2008. – 304 s. [in Russian].
7. Psykholohiia: Navch. Posib. / O.V.Vynoslavskaa, O.A.Breusenko-Kuznietsov, V.L.Zlyvkov ta in.; Za nauk. red. O.V.Vynoslavskoi. – 2-e vyd., pererob. ta dopovn. – K.: Firma "INKOS", 2009. – 390 s.
8. Feyerabend P. Izbrannyye trudyi po metodologii nauki: Perevodyi s angl. i nem. / Obsch. red.i avt. vstup. st. I.S.Narskiy. – M.: Progress, 1986. – 542 s. [in Russian].

Educational Content

5. Methods of Mastering the Discipline (Educational Component)

Lectures

№	The title of the lecture topic and a list of key issues (tasks for independent work of students)
1	<p>Topic 1. Psychology of creativity as a branch of psychological knowledge Definition of "psychology of creativity" and its main categories. The place of psychology creativity in the system of psychological sciences. The creative nature of mental reality. Features of reflection of the creative beginning in a mental being of the person are inherent historical forms of the subject of psychology - such as the soul, consciousness, unconscious, behavior, mental phenomena, and the individual world of the human "I". Stages of creativity process: desire, knowledge, skills. Stages of creative work: intellectual readiness, problem identification, task formulation, solution search, obtaining a new principle, the transformation of the principle into a scheme and formal design.</p> <p>Tasks for Self-study:</p> <ol style="list-style-type: none">1. To reveal the essence of the scientific method in a broad sense.2. To determine the peculiarity of the reflection of the creative principle in the mental being of man, inherent in the historical forms of the subject of psychology.3. Argue the creative nature of mental reality.

Seminar (Practical Training)

The main tasks of the cycle of seminar (practical training) are the formation of postgraduate students:

- basic ideas about the psychological potential, resources, reserves and capabilities of the scientific subject and creative activity;
- understanding of current and potential areas of development of creative potential of the individual;
- experience in recording and assessing the levels of development of special and general abilities, talents;
- experience of self-presentation and self-expression in creative activity (image visualization, communicative mechanics, verbal effect, fluid radiation).

№	The name of the subject and the list of key issues (list of didactics, references to literature and assignments on the SS)
1	<p>Topic 6. Creative potential of the individual Genetic psychology of creativity. Subject game and drawing as manifestations of creativity in childhood. The act and creativity of a teenager. Imagination and creativity in adolescence. Moral art. A heroic deed. Creativity as a mechanism of personality development. Individual potential of human existence. Intentions and potencies. Genius, talent, genius. Giftedness research methods. Investment theory creativity.</p> <p>Tasks for Self-study:</p> <ol style="list-style-type: none"> 1. To reveal the essence of the creative potential of the individual. 2. To characterize creativity as a mechanism of personality development. 3. To substantiate the internal prerequisites for success in science. 4. Compare the main methods of research giftedness. 5. Carry out a comparative analysis of external and internal scientific motivation creativity of the individual. 6. Self-presentation and self-expression of a creative personality.

6. Independent Works of Students

Postgraduate students independently study the following issues:

Topic 2. Philosophical and methodological basis of the psychology of creativity

Object and subject of research of psychology of creativity. Philosophical and methodological basis psychology of creativity. The principle of creativity and the principle of adaptation in the explanation of mental activity man. The problem of mental self-determination. The problem of the origins of the creative act. Existential theory of creativity.

Topic 3. Classical concepts in the psychology of creativity

Kharkiv School of Psychology of Creativity: Leading Ideas. The principle of economy as central explanatory principle of creative action. The study of creativity in the classical psychoanalysis of S. Freud. Creativity as sublimation.

Topic 4. Leading concepts in modern psychology of creativity

The study of creativity in the analytical psychology of K.G. Jung. Symptomatic and symbolic creativity. Study of creativity in psychodrama by JL Moreno. The idea of spontaneity as a source of human ability. Moreno's Theater of Spontaneity. Gestalt psychological, humanistic, cognitive approaches to creativity.

Topic 5. Psychological characteristics of the creative process

Stages of the creative process. Insight as a central link in the creative process. Obstacles and psychological barriers to creative activity. The role of the unconscious in the creative process. Creative motivation activities. Reproductive and productive mental processes. The role of intuition in the creative process. Intuition and insight. Imagination and bisociation. Thinking and mediation. Creativity and emotions. Research internal action plan.

Topic 7. Psychology of scientific creativity

Science as a special sphere of human creative activity. Scientific revolution. Paradigm and research program as a context of scientific creativity. The phenomenon of methodological crisis in psychology. The creative path of a scientist in the context of the history of science.

Topic 8. Psychology of technical creativity

Psychology of invention and invention. Features of the task in technical creativity. Triact for P. Engelmeier: desires, knowledge, skills. Genius, talent and diligence are the most important qualities technical invention. The role of insight in the technical invention. The rational side of the technical creativity. Strategic approach to technical creativity.

Topic 9. Theory of solving inventive problems

History of the beginning of the theory of solving inventive problems. Logic of development technical systems as a determinant in this approach. Invention as a solution to an inventive problem and development of the technical system. The program of the algorithm for solving inventive tasks. Step-by-step analysis of the problem in order to find the main contradiction. The law of development of technical systems through inclusion in others as subsystems. Determination of the ideal end result. Determination of physical contradictions. Ideas paired techniques, vepoles (complexes of techniques), standards - combinations of techniques and physical effects that cause strong solutions. Heuristic methods of overcoming technical contradictions.

Policy and Control

Course Policy (Educational Component)

Working on the study material of the credit module "Psychology of scientific and technical creativity", postgraduate students perform an individual semester task through training abstract. The purpose of writing an abstract is to confirm the level of mastery of basic postgraduate students provisions on selected topics, demonstration of knowledge of relevant literature; skills analyze the material, make generalizations and independent conclusions.

Work on the abstract involves an in-depth study of the chosen psychological problems, modern scientific literature, as well as mastering the skills of logical analysis and generalization of the material, its systematic presentation. The topic of the abstract is chosen by the postgraduate student independently within two weeks from the beginning of the semester, based on the proposed list. In addition to the proposed, postgraduate students can choose the topic of the abstract, required agreeing it with the teacher. Approximate topics of abstracts and content requirements and clearance are contained in Annex 1.

Postgraduate students submit an essay to the Department of Psychology and Pedagogy two weeks before exam.

Attendance and Task Performance

Attendance at lectures is not evaluated but is desirable because it is educational the material is presented in an accessible form and there is an opportunity to discuss issues of discussion and clarification of unclear points. For applicants for higher education who want to demonstrate excellent

learning outcomes, active work in lectures is simply necessary. However it is not necessary to work off the missed lectures.

Active participation of the graduate student in seminars is mandatory. The graduate student's rating is significant will be formed to the extent of the results of his work in seminars. Everyone missed seminar (regardless of the reasons for admission) reduces the final rating of the graduate student with discipline. In case of skipping a seminar, the topics must be studied as well all tasks are completed. Control of knowledge (understanding) by the graduate student of the missed subjects (performance of tasks) will take place during communication with the teacher according to the schedule of consultations available on the website Department of Psychology and Pedagogy. Postgraduate student who will perform the relevant tasks (answer the questions) will receive the appropriate points for the rating depending on the quality of answers (task performance).

The postgraduate student in the seminar can use the written notes prepared by hi questions of the topic of the lesson (or provided by the task), but to express a position by reading from the sheet paper is not worth it.

Forms of Work

Lectures and seminars. Topics of lectures are covered in the work program (syllabus) discipline. Questions from postgraduate students to the teacher are welcomed during the lecture. Allowed and welcomed dialogue between postgraduate students and the teacher at the lecture. Postgraduate students focus on their practical training attention to the analysis of the methodological validity of modern scientific research in the psychology field and master active techniques of discussion management.

University Policy

Academic Integrity

The main types of academic responsibility are established by the Law of Ukraine "On Education". According to Part 6 of Article 42 to the main types of academic responsibility of students include: re-assessment (test, exam, test, etc.); again passing the relevant educational component of the educational program; deductions from the institution education; deprivation of an academic scholarship; deprivation of benefits provided by the educational institution for payment for teaching.

Policies, standards, and procedures for academic integrity include the following regulatory documents of the Igor Sikorsky Kyiv Polytechnic Institute, published on the University website: Code of The Honor of the Igor Sikorsky Kyiv Polytechnic Institute <https://kpi.ua/files/honorcode.pdf>, System Regulations prevention of academic plagiarism <https://rb.gy/agihij>, as well as legal documents, official recommendations, orders and directives, sociological research of the Igor Sikorsky Kyiv Polytechnic Institute, methodical materials, educational courses <https://kpi.ua/academic-integrity>.

Among the technological solutions in the fight against violations of academic integrity within the study of the course "Methodology of scientific research", " can be noted: verification prepared abstract on plagiarism. The test is performed in the Detection System matches/identity/similarity of the text from the company Unichek. In case of detection of academic plagiarism, the authors are responsible for the work of employees and applicants for the higher education of the University in accordance with current legislation, including those provided by the Law of Ukraine on Education.

Norms of Ethical Behavior

Norms of ethical behavior of students and employees are defined in Section 2 of the Code of Honor of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". Details: <https://kpi.ua/code>, as well as in the Regulations on the Commission on Ethics and Academic Integrity of Igor Sikorsky Kyiv Polytechnic Institute https://data.kpi.ua/sites/default/files/files/2015_1-140a1.pdf.

7. Types of Control and Rating System for Assessing Learning Outcomes (Rating System)

Current control: [survey on the topic of the lesson, task performance](#).

Semester control: [exam](#).

Evaluation and Control Measures

The rating in the discipline consists of points obtained for:

- 1) preparation of a report and presentation at a seminar, group discussion at a seminar;
- 2) writing an abstract;
- 3) examination control work.

The postgraduate student will receive the highest rating if he takes an active part in the conducted seminars, provides complete and reasoned answers, logically teaches them, expresses his own position on debatable issues. Proper preparation of a postgraduate student for a seminar will take an average of 1-1.5 hours. Detailed criteria for evaluating learning outcomes for postgraduate students are defined in the regulations on rating system in the discipline and are presented in Annex 2.

The postgraduate student can challenge the teacher's assessment by filing a complaint to the teacher no later than the next day after acquainting the postgraduate student with the teacher's grade. Complaints will be considered according to the procedures established by the university.

The objectivity of examiners is ensured by the application of the developed criteria evaluation, holding exams mainly in written form https://document.kpi.ua/files/2020_7-137.pdf

In the Regulations on current, calendar and semester control of learning outcomes in Igor Sikorsky Kyiv Polytechnic Institute https://document.kpi.ua/files/2020_7-137.pdf (page 4) it is said that in in case of a conflict situation of the applicant with the examiner before the event semester control, on a substantiated application of the applicant (collective application of applicants), the dean of the faculty creates a commission to conduct the planned semester control event.

Procedures for preventing and resolving conflicts of interest are regulated by the Regulations about solution conflict situations in Igor Sikorsky Kyiv Polytechnic Institute https://document.kpi.ua/files/2020_7-170.pdf.

A prerequisite for admission to the exam is a rating (Rc) of at least 50% of RC, ie 20 points. The exam is conducted in writing. Time of examination control work - 90 minutes. The control task contains 2 questions on thematic sections of the credit module. An indicative list of questions for the examination test is contained in Annex 3.

Table of correspondence of rating points to grades on the university scale:

<i>Number of points</i>	<i>Evaluation</i>
100-95	Excellent
94-85	Very good
84-75	Good
74-65	Satisfactorily
64-60	Sufficient
R < 60	Insufficient
Admission conditions are not met	Not admitted

8. Additional Information on the Discipline (Educational Component)

Recommendations for Postgraduate Students

When studying the discipline "Psychology of scientific and technical creativity" postgraduate student has use, in first of all, the literature, which is defined in the main list and is in the funds of Scientific and Technical Library of Igor Sikorsky Kyiv Polytechnic Institute. An additional source of information should be lecture notes. Postgraduate students are also recommended to find the latest materials through Internet psychological research.

The content of the discipline is realized through the mastery of three blocks: theoretical and practical and the unit of independent work. Mastering the theoretical block is carried out in the process of working on lectures and literature processing. Specifics are practiced at seminars skills and abilities to analyze the theoretical foundations, methods, technologies and organization of scientific research activities of a psychologist, the ability to argue and defend their own point of view.

Mastering the discipline "Psychology of professional activity" involves a comprehensive approach when choosing forms and methods of teaching. The essence of this approach is a combination of lecture and various forms of independent work, including: work in a seminar; preparation of reports and presentations at seminars.

The seminar gives an opportunity to identify the level of preparation for it (speech, participation in discussions, expression of one's own opinion). Criteria for evaluating the performance of seminar tasks are: logical sequence of answers; completeness of disclosure of each issue; analytical reasoning in response; references to sources; the validity of personal conclusions. In the process work with literature and notes, it is important to record bibliographic information of the source and page numbers from which opinions were borrowed for further reference to sources. Previously prepared materials are processed, include their own analysis.

Extracurricular Activities

Possible participation of postgraduate students in informal circles, in particular in the open group PhD-incubator <https://www.facebook.com/groups/2735550373369832/>

Distance Learning

Synchronous distance learning is possible using video conferencing platforms and educational platform for distance learning at the university.

Inclusive Education

Allowed

The Work Program of the Discipline (Syllabus):

Compiled by the Professor, Doctor of Psychological Sciences, Lozhkin Georgiy Volodymyrovych

Approved by the Department of Psychology and Pedagogy (Protocol № ___ of _____)

Approved by Methodical Commission of Faculty (Protocol № ___ of _____)

Approximate Topics for Abstracts

1. The creative nature of mental reality.
2. Features of reflection of the creative principle in the mental being of man, inherent in historical forms subject of psychology
3. Philosophical and methodological basis of the psychology of creativity.
4. The principle of creativity and the principle of adaptation in explaining the mental activity of man. Problem mental self-determination.
5. The problem of the origins of the creative act.
6. Existential theory of creativity.
7. Kharkiv school of psychology of creativity: leading ideas.
8. The principle of economy as a central explanatory principle of creative action.
9. The study of creativity in the classical psychoanalysis of Freud. Creativity as sublimation.
10. The study of creativity in the analytical psychology of K.G. Jung. Symptomatic and symbolic creativity.
11. The study of creativity in psychodrama Ya.L. Moreno.
12. The idea of spontaneity as a source of human ability. Moreno's Theater of Spontaneity.
13. Gestalt psychological, humanistic, cognitive approaches to creativity.
14. Genetic psychology of creativity. Elements of creative activity in anthropoids.
15. Subject game and drawing as manifestations of creativity in childhood.
16. The act and creativity of a teenager.
17. Imagination and creativity in adolescence.
18. Moral creativity. A heroic deed.
19. Creativity as a mechanism of personality development.
20. Individual potential of human existence. Intentions and potencies.
21. Giftedness, talent, genius. Giftedness research methods.
22. Investment theory of creativity.
23. Stages of the creative process.
24. Insight as a central link in the creative process.
25. Obstacles to the creative process.
26. The role of the unconscious in the creative process.
27. Motivation of creative activity.
28. Reproductive and productive mental processes.
29. The role of intuition in the creative process. Intuition and insight.
30. Imagination and bisociation.
31. Thinking and mediation.
32. Creativity and emotions.
33. Study of the internal action plan.
34. Science as a special field of human activity.
35. The structure of scientific knowledge. Features of scientific discoveries.
36. Paradigm and research program. Scientific search and puzzle solving.
37. Scientific revolution.
38. Psychology of invention and invention. Features of the task in technical creativity.
39. Genius, talent and diligence as the most important qualities of technical invention.
40. The role of insight in the technical invention.
41. The rational side of technical creativity.
42. Strategic approach to technical creativity.
43. History of the beginning of the theory of solving inventive problems.
44. The logic of the development of technical systems as a determinant in the approach to the theory of inventive solutions tasks.

45. Invention as a solution to an inventive problem and the development of a technical system.
46. The program of the algorithm for solving inventive tasks.
47. Step-by-step analysis of the problem in order to find the main contradiction.
48. Information support ARIZ: indicators of physical effects.
49. The law of development of technical systems through inclusion in others as subsystems
50. Heuristic methods of overcoming technical contradictions in TRVZ.
51. The phenomenon of methodological crisis. Means of methodological crisis.
52. Methodological pluralism.
53. Insight in science.
54. The heuristic significance of scientific theory.
55. Divergent and convergent thinking of a scientist.

The structure of the abstract

The style of presentation of the material should be a scientific and business.

The material is distributed evenly in accordance with the plan of the abstract:

- introduction (the relevance and practical significance of the chosen topic must be substantiated abstract, defined purpose and objectives of the work);
- the main part (the topic of the abstract is revealed by covering the main issues. It is necessary to focus on the analysis of the questions in the literature with conclusions regarding their theoretical and practical significance;
- conclusions (it is necessary to formulate:
 - a) scientific-theoretical and practical results of the analysis on the issue abstract;
 - b) theoretical and practical recommendations arising from the analysis. They should be logically related to the content of the presented material);
- list of references (contains used sources and publications).

Requirements for writing an abstract

The volume of the abstract should be 1 printed sheet (24 pages). The total volume of the work does not include appendices, glossary, list of sources used, tables and figures, which completely occupy the area of the page. But all pages of these elements are subject to continuous numbering. The text must contain references to the literature and other sources used in the preparation of the abstract.

The text of the abstract is presented in the state language on standard sheets of the format A-4 (210 x 297).

The work is printed in Times New Roman font, 14 point; alignment - "Width"; line spacing "One and a half" (1.5 Lines); paragraph indent - five characters (1.25 cm); top and bottom margin - 2 cm, left - 3 cm, right - 1 cm. Paragraph indentation should be the same throughout the text and equal to five signs (1.25 cm).

Sections and subsections should contain headings that should be accurately reproduced in the table of contents. Section headings are usually placed in the middle of the line. Section titles are capitalized letters without punctuation marks at the end, without underscores. Section headings should start with proper indentation.

Page numbering must be continuous. The serial number of the page is indicated in Arabic number and put in the upper right corner of the page without dots or dashes. Title the sheet is included in the general page numbering of the written work, but the page number on the title page is usually not affixed. Sections should also be numbered in Arabic numerals.

When using literary sources in the text of a written work there can be two options links to them. The first is page links (footnotes): when a page cites a source, then at the bottom of this page under the main text is a bibliographic description of the literary source and the page is specified. The second - when in the case of a reference to a literary source in square brackets indicate its serial number in the bibliography and a specific page, quote, exact figures, data.

Illustrative material - drawings, graphics, diagrams, etc. should be posted directly after the first reference to it in the text. If the graph, diagram, table does not fit on the page, where there are links, they are provided on the next page. Each illustrative material should be linked in the text.

The maximum number of points for the abstract is 20 points.

Each abstract is evaluated based on an analysis of a set of the following criteria:

1. Relevance of the topic.
2. The plan and content of the abstract should systematically reveal the chosen topic.
3. Personal contribution is estimated from the presence of own analytical conclusions.
4. Used sources, ie the presence of a sufficient number of modern regulatory and scientific sources.

Rating System for Assessing Learning Outcomes

The rating in the discipline "Psychology of scientific and technical creativity" consists of points obtained for:

- 1) preparation of a report and presentation at a seminar, group discussion at a seminar;
- 2) writing an abstract;
- 3) examination control work.

System of rating (weight) points and evaluation criteria:

1. Work on seminars at a seminar maximum number of points is 10:

active participation in the lesson; providing a complete and reasoned, logical the presented report, the answer, statement of own position on debatable questions or completely correct solution of problems with the corresponding substantiation, in combined with appropriate additions to the answers of other postgraduate in the discussion	8-10
active participation in the lesson; giving the right answers or the right ones solving problems with minor inaccuracies, violations of the logic of teaching answers or justification in solving the problem	5-7
providing answers with numerous significant errors or solving the problem with gross errors, solving the problem without justification	1-4

2. Execution of an individual task (abstract) (maximum number of points is 30)

the topic of the abstract is relevant, the plan and content of the abstract systematically reveal the selected topic, there are analytical conclusions of the postgraduate, in the preparation of the abstract used sufficient number of normative and scientific sources	23-30
the topic of the abstract is relevant, the plan and content of the abstract systematically reveal the selected topic, a sufficient number of normative and scientific ones were used in the preparation of the abstract sources but there are no analytical conclusions of the postgraduate	16-22
the topic of the abstract is relevant, but the plan and content of the abstract are not sufficiently disclosed selected topic, there are no analytical conclusions of the postgraduate in the preparation of the abstract a sufficient number of normative and scientific sources were used	9-15
the topic of the abstract is relevant, but the plan and content of the abstract do not disclose the selected topic, there are no analytical conclusions of the postgraduate, used in the preparation of the abstract insufficient number of normative and scientific sources	1-8

3. Exam: examination test is conducted in writing for 90 minutes.

Examination test maximum number of points is 60. Examination the ticket consists of two theoretical questions on thematic sections of the course. A significant score for everyone question is 30.

a complete, clear, logical answer to the question that testifies about a deep understanding of the essence of the issue, acquaintance of the postgraduate not only with the material lectures, but also with a textbook and additional literature; statements by the postgraduate student own position on the issues of discussion, if such are raised in the issue	25-30
the answer to all the questions, but not quite complete or not clear enough that	19-24

indicates a correct understanding of the essence of the issue, acquaintance of the postgraduate with material of lectures and textbook; certain inaccuracies in the answer	
enough superficial answer to all questions; significant errors in answers; lack of answer to one question with the correct, in general, answer to others	10-18
correct answer to only one question in the absence of answers to others or with incorrect answers to them	5-9
incorrect answer to the questions, which indicates ignorance relevant learning material, but an attempt to express one's own understanding the essence of the question; no answer	0-4

Rating scale (R):

The sum of weight points of control measures during the semester is:

$$RS = 10 + 30 = 40 \text{ points}$$

The examination component of the scale is equal to 60% of R, namely:

$$RE = 60 \text{ points.}$$

Thus, the rating scale of the discipline is:

$$R = RC + RE = 100 \text{ points.}$$

A prerequisite for admission to the exam is a rating (Rc) of at least 50% of RC, ie 20 points.

To receive the postgraduate appropriate grades (ECTS and traditional) his rating (RD) is translated according to the table:

<i>RD</i>	ECTS assessment	The assessment is traditional
95 – 100	Perfectly	Perfectly
85 – 94	Very good	Good
75 – 84	Good	
65 – 74	Satisfactorily	Satisfactorily
60 – 64	Enough (meets minimum criteria)	
<i>RD</i> < 60	Unsatisfactorily	Unsatisfactorily

An Indicative List of Questions for the Examination Control Work

1. Analyze the philosophical and methodological basis of the psychology of creativity.
2. Compare the principle of creativity and the principle of adaptation in the explanation of mental activity, point to their consequences for understanding the mental existence of man.
3. Justify the creative nature of mental reality.
4. Give and compare the features of reflection of the creative principle in the mental being of man, inherent in the historical forms of the subject of psychology: "soul" and "consciousness".
5. Give and compare the features of reflection of the creative principle in the mental being of man, inherent in the historical forms of the subject of psychology: "unconscious" and "behavior".
6. Explain the problem of the origins of the creative act.
7. Describe the tasks of genetic psychology of creativity.
8. Analyze the consequences for the psychology of creativity of a general psychological problem mental self-determination.
9. Evaluate the heuristic significance of the existential theory of creativity.
10. Analyze the leading ideas of the Kharkov school of psychology of creativity.
11. Analyze the principle of economy as a central explanatory principle of creative action.
12. Evaluate the achievements of the study of creativity in the classical psychoanalysis of Z. Freud.
13. Analyze the idea of sublimation as an explanatory principle of creativity.
14. Evaluate the achievements of the study of creativity in the analytical psychology of K.G. Jung.
15. Compare the symptomatic and symbolic work of K.G. Jung.
16. Evaluate the achievements of the study of creativity in psychodrama J.L. Moreno.
17. Define the essence of the idea of spontaneity as a source of human ability. Theater of spontaneity Moreno.
18. Compare Gestalt psychological, humanistic, cognitive approaches to creativity.
19. Assess the importance of such manifestations of creativity in childhood as a subject game and drawing.
20. Analyze the significance and nature of the act in the development of adolescent creativity (according to V.A. Roments).
21. Describe the imagination and creativity in adolescence.
22. Define the essence of moral creativity and heroic deed.
23. Describe creativity as a mechanism of personality development.
24. Define the essence of the individual potential of human existence according to I.P. Manoha.
25. Compare the intentions and potentials of human existence (according to I.P. Manoha).
26. Discover the essence of the concepts: talent, talent, genius.
27. Analyze the main methods of research giftedness.
28. Describe the stages of the creative process.
29. Justify the role of insight as a central link in a number of models of the creative process.
30. Justify the role of the unconscious in the creative process.
31. Describe the motivation of creative activity.
32. Compare reproductive and productive mental processes.
33. Justify the role of intuition in the creative process.
34. Justify the role of imagination and bisociation in human creativity.
35. Justify the role of thinking and mediation in human creativity.
36. Describe science as a special field of human activity.
37. Define the structure of scientific knowledge and justify the consequences of such a structure.
38. Analyze the general features of scientific discoveries.
39. Compare the concepts of "paradigm" and "research program".
40. Compare scientific research and "solving puzzles" as typical creative tasks activities of the scientist.
41. Describe the essence of the scientific revolution.

42. Give a general description of the psychology of invention and invention.
43. Describe the features of the task in technical creativity.
44. Evaluate the idea of "triact" by P. Engelmeier.
45. Compare genius, talent and diligence as the most important qualities of technical invention (after P. Engelmeier)
46. Describe the role of insight in the technical invention.
47. Describe the rational side of technical creativity.
48. Justify the strategic approach to technical creativity.
49. Justify the importance of the logic of development of technical systems as a defining theory in the approach solving inventive tasks.
50. Describe the invention as a solution to the inventive problem and the development of technical systems.
51. Describe the program of the algorithm for solving inventive tasks.
52. Describe the law of development of technical systems through inclusion in others as subsystems.
53. Analyze the heuristic methods of overcoming technical contradictions in TRVZ.
54. Describe the phenomenon of methodological crisis in psychology.
55. Analyze the leading means of methodological crisis.
56. Justify the principle of methodological pluralism.
57. Describe the heuristic significance of scientific theory.
58. Compare the divergent and convergent thinking of a scientist