MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
ODESSA I.I. Mechnikov NATIONAL UNIVERSITY
Department of mathematical support of computer systems

"APPROVED"
Vice-rector for scientific and pedagogical work
_____
_____ 20___

WORKING PROGRAM OF EDUCATIONAL COURSE

OK9 "Master's seminar"
(course name)

Level of higher education Second (master's)

Field of knowledge 12 – Information technologies

Specialty 126 – Information systems and technologies
(code and name of specialty)

Educational and professional program Information systems and technologies
(EPP/ESP name)

ONU - 2022

Working program of the study course "Master's Seminar". – Odesa: ONU, 2022. – 8 p.

Developers:
Malakhov E.V., Sc.D. (Tech.), professor, head department of MSCS

The work program was approved at the meeting of the Department of Mathematical Support of Computer Systems

Protocol No. 1 from "25" 08 2022 year

Head of the department _____ (Eugene MALAKHOV)
(signature) (First Name Surname)

Agreed with the guarantor of the EPP "Information systems and technologies"

_____ (Eugene MALAKHOV)
(signature) (First Name Surname)

Approved by the educational and methodical commission (EMC) for IT specialties of the FMPhIT

Protocol No. 1 from "31" 08 2022 year

Head of EMC _____ (Alla RACHYNSKA)
(signature) (First Name Surname)

Reviewed and approved at the meeting of the department _____

Protocol No. 1 from "29" 08 2023 year

Head of Department _____ (_____)
(signature) (First Name Surname)

Reviewed and approved at the meeting of the department _____

Protocol No. ___ from "____" _____ 20__ year

Head of Department _____ (_____)
(signature) (First Name Surname)

1. Course description

<table>
<tr><td rowspan="2">Name of indicators</td><td rowspan="2">Field of knowledge, specialty, specialization, level of higher education</td><td colspan="2">Characteristics of the academic course</td></tr>
<tr><td>full-time education</td><td>external form of education</td></tr>
<tr><td rowspan="14">The total number of:

credits - 3

hours - 90

content modules - 3</td><td rowspan="14">Branch of knowledge
12 - Information technologies

Specialty
126 – Information systems and technologies

Level of higher education:
Second (master's)</td><td colspan="2">Mandatory</td></tr>
<tr><td colspan="2">Year of training:</td></tr>
<tr><td>1st</td><td></td></tr>
<tr><td colspan="2">Semester</td></tr>
<tr><td>2nd</td><td></td></tr>
<tr><td colspan="2">Lectures</td></tr>
<tr><td>hours</td><td>hours</td></tr>
<tr><td colspan="2">Practical, seminar</td></tr>
<tr><td>18 hours</td><td>6 hours</td></tr>
<tr><td colspan="2">Laboratory</td></tr>
<tr><td>hours</td><td>hours</td></tr>
<tr><td colspan="2">Independent work</td></tr>
<tr><td>72 hours</td><td>84 hours</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2">Final control form:
credit</td></tr>
</table>

* - in the presence

2. The purpose and tasks of the educational course

The purpose is the acquisition by students of the skills of public presentations related to master's studies, presentation of results and participation in discussions.

Task:

– familiarization with the basics of research planning;
– familiarization with the requirements for structuring master's theses and reports;
– familiarization with approaches to presentation of research results;
– preparation for the performance of qualification works.

The process of studying the course is aimed at forming elements of the following **competencies**:

a) general (GC): —

GC01. Ability for abstract thinking, analysis, and synthesis.

GCM01. Knowledge of rules for formulating research tasks approaches to goal selection, problem analysis, and methods for problem-solving, rules for presenting results, conducting discussions, and publishing scientific materials.

c) special professional (SC):

SC02. The ability to formulate requirements for the stages of the life cycle of service-oriented information systems.

SCM02. The ability to solve physics-mathematics problems related to modeling natural phenomena or technological processes using modern computer methods.

Program learning outcomes:

LO01. Locate necessary information in scientific and technical literature, databases, and other sources, analyze, and evaluate this information.

LO06. Justify the selection of technical and software solutions, considering their interaction and potential impact on solving organizational problems, and organize their implementation and use.

LO11. Solve digital transformation tasks in new or unfamiliar environments based on specialized conceptual knowledge, including modern scientific achievements in the field of information technology, research, and knowledge integration from various fields.

LOM01. Provide authorial support for the design and implementation of information systems and technologies, utilize intellectual property knowledge in inventive activities, and international cooperation in the IT field.

LOM02. Choose the most practical organization of marketing for software products for the firm and represent the overall sequence of activities for the organization and operation of any channel for the sale of software products and information technologies.

LOM05. Present research results, conduct discussions and publish research findings.

Expected learning outcomes. As a result of studying the academic course, the student should

know: *basic rules and approaches for planning research, structuring master's theses, scientific articles and public reports.*

be able: *form presentations of the results of scientific research, conduct discussions on scientific topics, evaluate reports.*

3. Course content

Content module 1. Structuring qualification papers and scientific articles.

Topic 1. Structuring qualification papers and scientific articles.

Topic 2. Overview of subject areas. Relevance of research. Setting the research task.

Content module 2. Overview of information sources.

Topic 1. Analysis of existing methods and technologies intended for solving the problems of master's research.

Content module 3. Solving research problems.

Topic 1. Methods and technologies proposed by the master's student for solving research problems.

4. Course structure

Names of content modules and topics	Number of hours									
	Full-time					Correspondence form				
	That's all	including				That's all	including			
		l	p	lab	Wed		l	p	lab	Wed
1	2	3	4	5	6	7	8	9	10	11
Content module 1. Structuring qualification papers and scientific articles.										
Topic 1.	1		2		16	20		1		20
Topic 2.	4		4					1		
Content module 2. Overview of information sources.										
Topic 1.	5		6		28	34		2		32
Content module 3. Solving research problems.										
Topic 1.	9		6		28	34		2		32
Total hours	**90**		**18**		**72**	**90**		**6**		**84**

Control form: **IERT** - individual task (report with presentation)

5. Topics of seminar classes

No s/p	Topic name	Number hours
1	Structure and stages of master's research	2
2	Overview of the subject area of the master's research, determination of the relevance of the research, formulation of the research task	4
3	Analysis of existing methods and technologies intended for solving the problems of master's research	6
4	Proposed methods and technologies for solving research problems	6
	Total hours	**18**

6. Topics of practical classes

Practical classes are not provided

7. Topics of laboratory classes

Laboratory classes are not provided

8. Independent work

No s/p	Title of the topic / types of tasks	Number hours
1	Review of scientific articles and information resources	24
2	Mathematical methods and information technologies	24
3	Creation of new methods, modification of existing methods, creation of information technology for integration of methods	24
	Total hours	**72**

Independent work includes:
[1] – preparation for seminar classes;

8.1. Individual educational and research task

The individual task consists in the preparation of a report and presentation of parts of the master's research, participation in the discussion and answering the questions of the seminar participants - the seminar leader, fellow students and invited experts.

The student must prepare 3 reports according to the topics of the seminars.

9. Teaching methods

Reports using multimedia presentation material.

10. Control methods

During the defense of an individual assignment, the student must:

– perform a report with a multimedia presentation of a certain stage of one's master's research;
– to answer the questions of the seminar participants regarding the presented report;
– hold a discussion regarding the proposed analyzes or solutions.

10.1. IERT evaluation criteria:

The IERT evaluation consists of two balanced components: evaluation of the report and discussion by the seminar leader and evaluation of the answers to the participants' questions.

1. The report must be complete according to the requirements of a certain section of the master's research, but it must not contain material that does not relate to the essence of the master's research.
2. The student must clearly formulate statements, skillfully apply the necessary concepts and formulas, demonstrate knowledge of the main issues of the subject area.
3. Answers to questions with false statements are evaluated based on the closeness of the answer to the correct one.
4. Omissions in the justification of statements during the discussion are taken into account and this leads to a reduction in the number of points.

5. Shortcomings, inaccuracies in the presentation of the material, reduce the number of points.
6. Ignorance and misunderstanding of the main purpose of the study, lack of understanding of the subject area leads to withdrawal of up to 90% of points.
7. If the report is not completed, then zero points are assigned.

11. Questions for final control

The score of the final control is calculated as the arithmetic mean of the IERT scores.

A student can get additional points for correct questions asked to other speakers. A question that relates to the subject area of the speaker's master's research and does not go beyond the research stage (topics of the seminar) is considered correct. Each question gives 0.5 points to the total sum, which cannot exceed 100 points.

12. Distribution of points received by students

Content module No.1	Content module No. 2	Content module No. 3	Average
IERT 1	IERT 2	IERT 3	
100	100	100	100

IERT is an individual educational and research task

Evaluation scale: national and ECTS

The sum of points for all types of educational activities	ECTS assessment	Evaluation on a national scale	
		for an exam, course project (work), practice	for credit
90-100	A	perfectly	counted
85-89	B	fine	
75-84	C		
70-74	D	satisfactorily	
60-69	E		
35-59	FX	unsatisfactory with the possibility of reassembly	not counted with the possibility of retaking
0-34	F	unsatisfactory with mandatory repeated study of the course	not enrolled with mandatory repeated study of the course

13. Educational and methodical support

1. Methodological instructions for the execution and registration of qualification works of specialties of the field 12 "Information technologies" of the Odessa I.I. Mechnikov National University / Malakhov E.V., Gunchenko Yu.O., Voloshchuk L.A., Roznovets O.I., Trubina N.F. // Approved by NMK for IT specialties of FMFIT ONU (protocol No. 3 dated 03/17/2021). - ONU, 2021. - 38 p.

14. Recommended Books

14.1. Basic literature

1. Vitchenko A. O., Vitchenko A. Yu. Basics of scientific research in higher education: tutorial. - Kyiv: FOP Yamchynskyi O.V., 2020. - 272 p.
2. Doumont, J., ed. English Communication for Scientists. Cambridge, MA: NPG Education, 2010. – Access mode:https://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/. – Updated: January 17, 2014.
3. Wortman-Wunder, Emily, & Kate Kiefer. (1998). Writing the Scientific Paper. – Writing@CSU. Colorado State University. – Access mode:https://writing.colostate.edu/guides/guide.cfm?guideid=83

14.2. Auxiliary literature

4. Birta G. O. Methodology and organization of scientific research. [text] : education manual / G.O. Birta, Y.G. K. Burgu: "Center for Educational Literature", 2014. - 142 p.
5. Sydorenko V.K. Basics of scientific research: Textbook / V.K. Sydorenko, P.V. Dmytrenko. - K.: RNNC DINIT, 2000. - 260 p.

15. Electronic information resources

1. Scientific library of Odesa I.I. Mechnikov National University. Researchers. Access mode:http://lib.onu.edu.ua/issledovatelyam/
2. Scientific library of Odesa I.I. Mechnikov National University. Scientometric activity. Access mode:http://lib.onu.edu.ua/naukometricheskaya-deyatelnost/
3. 11 steps to structuring a scientific paper editor will take seriously. Access mode:https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously