

Non-Profit Joint-Stock Company «L.N. Gumilyov Eurasian National University»

Faculty «Information Technologies»

Department Computer science

Syllabus

COMS 53009 Research, mobile e-commerce applications

on the discipline

RM 6302 Research methods for students of education program

7M01514 -SmartCity-Technologies

**Нур-Султан
2022**



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Document signed

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Syllabus on the discipline **Research methods** _____

(discipline code and name)

Designed on the base of education program **«7M01514 – Smart City - technologies»** _____

(education program code and name)

Considered at the department meeting **Department of Computer Science**

Record № 1_ «_27_» ___08_____ 2022_

Approved at the meeting of the Educational and Methodological Commission of the Faculty

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EXPLANATORY NOTE

1. Description

Aim	Learning objectives *	Learning outcomes
<p>This course has been designed to provide an opportunity for participants to enhance or advance their understanding of research through critical exploration of research language and approaches. The course introduces the methods of research and the elements of the research process within quantitative, qualitative, and mixed methods approaches.</p>	<p>To establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their work, social, local and global environment. RT2 – Possess modern pedagogical technologies and communication skills.</p>	<p>As a result of the study, students will:</p> <ul style="list-style-type: none"> • Understand research terminology • Be aware of the ethical principles of research, ethical challenges and approval processes • Describe quantitative, qualitative and mixed methods approaches to research • Identify the components of a literature review process • Critically analyze published research

**according to education program*

2. Prerequisites

Knowledge, skills and abilities acquired during the study of the following disciplines are necessary to master this discipline: ___Theoretical foundations of computer science_____ (course name)

Postrequisites

The knowledge, skills and abilities acquired during the study of the discipline are necessary for the learning of the following disciplines:___Scientific-research work of graduate students _____ (course name)

3. Extract from the curriculum

Year 2

Semester 3

Number of ECTS 5

Types of classes	Total number of hours
Lectures	15
Practical classes	30
Seminars	
Laboratory practicals	
Independent work of a student (IWS)	105
Total	150

4. Thematic plan of the discipline by modules

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(in academic hours)


Module №	Name of the module
1	Introduction to Research methods
2	The Research Hypotheses.

Lectures				
Week №	Module №	Theme of the lecture	Number of hours	Types and methods of training
1	1	Introduction to Research. Some of the reasons for doing research. How research can be used to gather evidence to inform your practice. The applications of research.	1	The method of action learning
2	1	General Characteristics of Research. Characteristics and requirements of the research process. Types of research from the perspective of applications, objectives and enquiry modes. Research paradigms.	1	Brainstorming
3	1	Formulating a Research Problem. Scientific Thinking. What is a Research Problem. The importance of formulating a research problem. Sources of research problems. Considerations in selecting a research problem	1	Discussion
4	1	Reviewing the Literature. Meaning of Literature Review. The functions of the literature review in research. How to carry out a literature search. How to review the selected literature	1	Problem methods
5	1	Identifying Variables. What variables and concepts are and how they are different. How to turn concepts into operational variables. Types of variables from the viewpoint of: Causation, The study design. The unit of measurement	1	Discussion
6	1	The Research Hypotheses. Meaning of Hypothesis. Definitions of Hypothesis. Nature of Hypothesis. The definition of a hypothesis. The functions of a hypothesis in your research. How hypotheses are tested.	1	The method of action learning
7	1	Characteristics of a Good Hypothesis. Variables in a Hypothesis. Nature of Hypothesis. How to formulate a hypothesis. Different types of hypotheses and their applications	1	Discussion
8	2	Conceptualizing a Research Design What research design means. The important functions of research design. Issues to consider when designing your own research. The theory of causality and the research design	1	Debates
9	2	Selecting a Study Design. The differences between quantitative and qualitative study designs. Common	1	The method of action learning

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		study designs in quantitative research and when to use them		
10	2	Selecting a Method of Data Collection. Differences in methods of data collection in quantitative and qualitative research. Major approaches to information gathering. Collecting data using primary sources	1	Discussion
11	2	2.4 Collecting Data Using Attitudinal Scales. What attitudinal scales are and how to use them. The functions of attitudinal scales in quantitative research. Difficulties in developing an attitudinal scale and how to overcome them. Different types of attitudinal scales and when to use them	1	Problem methods
12	2	2.5 Selecting a Sample Meaning and Definition of Sampling. The differences between sampling in qualitative and quantitative research. Definitions of sampling terminology. The theoretical basis for sampling.	1	Brainstorming
13	2	2.6 How to Write a Research Proposal. The purpose of a research proposal in quantitative and qualitative research. How to structure a research proposal. How to write a research proposal.	1	Debates
14	2	2.7 Processing and Displaying Data. Methods for processing data in quantitative studies How to edit data and prepare data for coding.	1	Discussion/debates
15	2	2.8 Writing a Research Report How to write a research report. How to develop an outline for your research report. Writing about a variable. Different referencing systems. How to write a bibliography.	1	Brainstorming
Total			15	

Practical classes (seminars)				
Week №	Module №	Theme of the practical lesson (seminar)	Number of hours	Types and methods of training
1	1	1.1 Research and the Research Process	2	Discussion
2	1	1.2 Criteria of Good Research. Types of Research	2	Brainstorming
3	1	1.7 Selecting the Problem. Sources of the Problem. Defining a Problem	2	Debates
4	1	1.4 Need of Review of Literature. Objectives of Review of Literature. Sources of Literature	2	Problem methods
5	1	1.5 Precautions in Library Use. Reporting the Review of Literature	2	The method of action learning

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6	1	1.6 Functions of Hypothesis. Importance of Hypothesis. Kinds of Hypothesis	2	Discussion
7	1	1.7 Formulating a Hypothesis. Testing the Hypothesis	2	The method of action learning
8	2	2.1 Conceptualizing a Research Design. The important functions of research design. Issues to consider when designing your own research. The theory of causality and the research design	2	Discussion/debates
9	2	2.2 Selecting a Study Design. Common study designs in quantitative research and when to use them. Common study design in qualitative research and when to use them. The strengths and weaknesses of different study designs	2	Problem methods
10	2	2.3 Selecting a Method of Data Collection. Differences in methods of data collection in quantitative and qualitative research. Major approaches to information gathering. Collecting data using primary sources	2	Brainstorming
11	2	2.4 Collecting Data Using Attitudinal Scales. The functions of attitudinal scales in quantitative research. Difficulties in developing an attitudinal scale and how to overcome them. Different types of attitudinal scales and when to use them	2	Debates
12	2	2.5 Selecting a Sample. The differences between sampling in qualitative and quantitative research. Definitions of sampling terminology. The theoretical basis for sampling.	2	The method of action learning
13	2	2.6 How to Write a Research Proposal. How to structure a research proposal. How to write a research proposal.	2	Brainstorming
14	2	2.7 Processing and Displaying Data. How to edit data and prepare data for coding.	2	Discussion
15	2	2.8 Writing a Research Report. How to develop an outline for your research report. Writing about a variable. Different referencing systems. How to write a bibliography	2	Problem methods
TOTAL			30	

IWS				
Week №	Module №	Theme of IWS Deadlines	Number of hours	Types and methods of training
1	1	1.1 Describe how a research problem is selected	10	Report
2	1	1.2 Discuss the criteria of good research and the different types of	10	Article

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		research.		
3	1	1.3 Selecting the Problem. Sources of the Problem.	10	Presentation
4	1	1.4 Reporting the Review of Literature	10	Literature review analysis
5	1	1.5 Identifying a hypothesis and/or research problem, specifying a purpose, creating research questions	10	Identify the hypothesis and the main questions
7	2	2.1 Analysis and Interpretation of Qualitative Data	11	Article
8	2	2.2 Criteria for Selecting a Research Approach	11	Presentation
9	2	2.3 Analysis and Interpretation of Mixed Methods Data	11	Analysis report
10	2	2.4 Creating questionnaires. Interviews	11	Survey creation
11	2	2.5 Development of the structure to the specified journal publications	11	Article
TOTAL			105	

5. Brief organizational and methodological characteristics of the discipline

Types of control of educational achievements:

Midterm examination 1 _____ Oral examination _____

Midterm examination 2 _____ Oral examination _____

Summative assessment: _____ Oral exam _____

(The forms of current and midterm examination are determined by the teacher independently)

(The form of summative assessment is determined by the department)

Course Policies and Procedures:

- Mandatory attendance of all classes by the trainee according to the schedule;
- Preliminary preparation for classes;
- Timely execution and delivery of IWS;
- Preparation for all types of classes should be independent and creative;
- Active work and creativity during classes;
- Participation in all types of control;
- Commitment to the University's Academic Integrity Policy.

6. Educational and methodological coverage of the discipline

№	Author, name, publisher, year of publication	Information carrier	Available in stock (p)	
			In the library	At the department
1	2	3	4	5
Basic literature				
1	Strunk K. Research methods for social justice and equity in education / K. Strunk, L.A. Locke. - Cham : Springer Nature, 2019. - 308 c. - Springer. - Библиогр. в конце гл. - ISBN 978-3-030-05899-9.	Monograph	1	-
2	Neilson T. Research methods for the digital humanities / T. Neilson, D. Rheams. - Cham : Springer Nature, 2018. - 325 c. - ISBN 978-3-319-96712-7.	Manual	2	1
3	Мырзакожа Д. Современные методы исследования : учебное пособие / Д. Мырзакожа, А.А. Мирзаходжаев. - 3-е изд., доп. - Алматы : КазНАУ,	Textbook	3	-

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	2012. - 335, [1] с. : ил. - Библиогр.: с. 334-335. - ISBN 9965-700-62-1.			
4	Загвязинский В.И. Методология и методы психологопедагогического исследования : учебное пособие. - Москва : Академия, 2015. – 206 с. - ISBN 5-7695-2146-5.	Study guide	2	-
Additional literature				
5	Ю.Н. Колмогоров. Методы и средства научных исследований/ — Екатеринбург : Изд-во Урал. ун-та, 2017.— 152 с. ISBN 978-5-7996-2256-5	Textbook		+

The list of basic literature includes basic textbooks and manuals (usually three or four titles) in the disciplines of the socio-humanitarian profile for the last 5 years, in other areas - for the last 10 years.

Additional literature should include no more than 10 titles.

When specifying electronic and Internet resources, it is necessary to specify the short name of the information to which the link is given, then place the active link. The number of links to Internet resources should not exceed 10 titles.

7. System of learning outcomes assessment of a student

Students' knowledge, skills and abilities are evaluated according to the following system

Grade by letter system	Digital equivalent of grade	Percentage content	Grade by traditional system	Grade criteria
A	4,0	95-100	Excellent	The A grade is given when a complete, detailed answer to the question is given, a set of conscious knowledge about the object is shown, manifested in the free operation of concepts, the ability to identify its essential and non-essential features, cause-and-effect relationships. Knowledge about the object is demonstrated against the background of understanding it in the system of this science and interdisciplinary connections. The answer is formulated in terms of science, presented in literary language, logical, evidence-based, demonstrates the author's position of students.
A-	3,67	90-94		The A- grade is made when a complete, detailed answer to the question is given, a set of conscious knowledge about the object is shown, the main provisions of the topic are evidently disclosed; a clear structure, logical sequence is traced in the answer, reflecting the essence of the disclosed concepts, theories, phenomena. Knowledge about the object is demonstrated against the background of understanding it in the system of this science and interdisciplinary connections.



				The answer is presented in literary language in terms of science. There may be shortcomings in the definition of concepts, corrected by the student himself in the process of answering.
B+	3,33	85-89	Good	The B+ grade is given when the students give a complete, detailed answer to the question posed, the main provisions of the topic are evidently disclosed in the answer, a clear structure, logical sequence is traced, reflecting the essence of the concepts, theories, phenomena being disclosed. The answer is presented in literary language in terms of science. There are shortcomings in the answer, corrected by the student with the help of the teacher.
B	3,0	80-84		The B grade is given when a complete, detailed answer to the question is given, the ability to identify essential and non-essential signs, cause-and-effect relationships is shown. The answer is clearly structured, logical, presented in literary language in terms of science. There may be shortcomings or minor errors corrected by the student with the help of the teacher.
B-	2,67	75-79		The B- grade is made when a detailed answer to the question is given, the ability to identify essential and non-essential signs, cause-and-effect relationships is shown. The answer is clearly structured, logical, stated in terms of science. However, minor mistakes or shortcomings were made, corrected by the student with the help of guiding questions.
C+	2,33	70-74		The C+ grade is given when a complete but insufficiently consistent answer to the question is given, but at the same time the ability to identify essential and non-essential signs and cause-and-effect relationships is shown. The answer is logical and stated in terms of science. There may be 1-2 mistakes in the definition of basic concepts that the student found it difficult to correct on their own.
C	2,0	65-69	Satisfactory	The C grade is given in the case when an insufficiently complete and insufficiently detailed answer is given. The logic and sequence of the presentation have



				<p>violations. Mistakes were made in the disclosure of concepts, the use of terms. The student is not able to independently identify essential and non-essential signs and cause-and-effect relationships. The student can concretize generalized knowledge by proving their main points by examples only with the help of a teacher. Speech design requires corrections.</p>
C-	1,67	60-64		<p>The C- grade is given in the case when an incomplete answer is given, the logic and sequence of presentation have significant violations. Gross mistakes were made in determining the essence of the disclosed concepts, theories, phenomena, due to students' misunderstanding of their essential and non-essential features and connections. There are no conclusions in the response. The ability to reveal specific manifestations of generalized knowledge is not shown. Speech design requires corrections.</p>
D+	1,33	55-59		<p>The D+ grade is given when an incomplete answer is given. There is an illogical presentation. The teacher finds it difficult to prove. There are a lot of significant errors in the definitions of terms, concepts, characteristics of facts, phenomena. There are no inputs in the response. Speech is illiterate. When answering additional questions, the student begins to realize the existence of a connection between knowledge only after the teacher prompts.</p>
D	1,0	50-54		<p>The D grade is given when an incomplete answer is given, which represents scattered knowledge on the topic of the question with significant errors in definitions. There is fragmentary, illogical presentation. The student is not aware of the connection of this concept, theory, phenomenon with other objects of the module (discipline). There are no conclusions, concretization and evidence-based presentation. The speech is illiterate. Additional and clarifying questions from the teacher do not lead to correction of the student's answer not only to the question posed, but also to other questions of the module (discipline).</p>

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FX	0,5	25-49	Unsatisfactor y	The grade “unsatisfactory” corresponds to the letter FX, F , which has a digital equivalent of 0 and a percentage of 0-49. This assessment is made if the student has found gaps in the knowledge of the basic material provided by the program, has not mastered more than half of the module (discipline) program, has made fundamental mistakes in the answers, has not completed individual tasks provided for by the forms of current, intermediate and final control, has not worked through all the basic literature provided by the program.
F	0	0-24		