This Syllabus was approved by the minutes of the meeting No. 11 of 19 06, 2024 of the "Mathematics and Natural Sciences in Primary Education" department.

This Syllabus was approved by the minutes of the meeting No. 14 of the Council of Chirchik State Pedagogical University on 27.06, 2024.

Head of the educational and methodological department: **M.Boltayev**

Dean of faculty: **I.U.Tadjibaev**

Head of the department: **B. F. Yalg'ashev**

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REPUBLIC OF UZBEKISTAN
MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATIONS
CHIRCHIK STATE PEDAGOGICAL UNIVERSITY

"C O N F I R M"
Vice-rector for educational affairs
D.B. Akhmadjanov
2024 "___" _____

MATHEMATICS AND ITS TEACHING METHODOLOGY BY SCIENCE SYLLABUS

(Educational form: full-time 2nd cource)

Fields of knowledge:	100 000 – Education
Fields of education:	110 000 – Education
Areas of education:	60110500 – Primary education

Chirchik – 2024

SCIENCE SYLLABUS

Academic year:	2024/2025		
Subject name:	**Mathematics and its teaching methodology**		
Subject type:	Mandatory		
Subject code:	MUO'M106		
Year:	4		
Form of education:	Full time		
Type of education	Bachelor		
Form of training and hours allocated per semester:	**Total**	**3 rd semester**	**4 th semester**
	240	**120**	**120**
Lecture	**60**	**30**	**30**
Practical training	**60**	**30**	**30**
Laboratory training	—	—	—
Seminar	—	—	—
Independent education	**120**	**60**	**60**
Amount of credit:	**8**	**4**	**4**
Evaluation form:	**M. T 2**	**Test, Written**	**Test, Written**
	Final exam	**Test, Written**	**Test, Written**
Department responsible for science:	"Mathematics and natural science in primary education"		

Information about teachers

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Purpose of Subject (PS)	
PS1	To introduce students to the theoretical foundations of the elementary course of mathematics, to teach them to work independently with textbooks and scientific literature, and to teach students about the theories, laws, rules that are common to the elementary students of the theory of the elementary mathematics course is to form a scientific view.

Basic knowledge necessary for mastering science	
1.	Secondary education schools, AL and college must have mastered the subjects of Mathematics, Algebra and Geometry, Mathematics and its teaching methods1.

Education results (ER)	
	In terms of knowledge:
ER1	General fundamental knowledge is formed in all sections of mathematics and its teaching methodology;
ER2	The ground is created for them to learn about the next sections of mathematics and its teaching methodology;
ER3	By working with scientific literature, sorting information, and self-assessment, students' independent reading activities are formed;
ER4	General concepts, rules, laws, theories of mathematics and its teaching methodology are interpreted on the basis of scientific principles;
ER5	The interdependence of general concepts, rules, laws and theories of mathematics and its teaching methodology is taught;
ER6	Knows the historical stages of the formation and development of the theory of mathematics and the methodology of its teaching;
ER7	Students will have an understanding of the theoretical issues of mathematics teaching methodology.
	In terms of skills:
ER1	To be able to apply the knowledge gained in mathematics in different situations;
ER2	The skills of applying the general rules of mathematics teaching methodology in practice are developed;
ER3	They can apply the methods learned in mathematics teaching methodology;
ER4	He will acquire skills on the theoretical issues of mathematics teaching methodology.

Science content		
Form of training: Lecture (L)		**Hour**
III semester		
L1	Complex numbers (abstract number concept). Arithmetic operations on complex numbers.	2
L2	Geometric meaning of Complex numbers and trigonometric form	2
L3	Brief historical information about the emergence of geometry.	2
L4	Geometric figures, their definition, properties and signs.	2
L5	Ko'pyoqlilar. Ko'pyoqlilar haqida Eyler teoremasi.	2
L6	Rotating solids.	2
L7	Representation of solids on a plane.	2
L8	About the types of geometric problems and their solutions.	2
L9	The concept of quantity and its types. Section length and its main properties.	2
L10	Finding the areas of rectangles and other figures.	2
L11	Volume, mass and measurement of an object.	2
L12	Time intervals and their measurement. Other quantities seen in an elementary math course.	2
L13	Equality, inequality and equations.	
L14	Equation, system of equations and methods of solving them.	2
L15	Text problems. Methods of solving text problems.	2
Total		**30**
IV semester		
L1	Methodology of teaching mathematics in elementary grades as a science.	2
L2	Interactive methods. Methods used according to the level of activity of students.	2
L3	Use interactive methods in elementary math lessons.	2
L4	Types of control in mathematics class and their organization, methods used by students in working with notebooks.	2
L5	Organization of extracurricular activities in elementary mathematics.	2
L6	Teaching mathematics in specialized primary classes.	2
L7	Features of teaching mathematics in schools with few sets.	2
L8	Methodology of teaching non-negative integers numbering in elementary grades. Number, stages of formation of the concept of counting.	2
L9	Methodology of teaching numbering in tens and hundreds.	2
L10	Methodology of teaching numbering of thousands and multi-	2

	digit numbers.	
L11	Lesson organization, presentation and use of didactic materials. The role of mathematical dictation in teaching numeracy.	2
L12	General issues of forming the concept of quantity in elementary school students.	2
L13	Methodology for teaching the concepts of units of length and area.	2
L14	Methodology of teaching the concepts of mass and volume in elementary grades	2
L15	Methodology of teaching concepts of time and its measurement units.	2
Total		**30**
Form of training: Practical (P)		
III semester		
P1	Arithmetic operations on complex numbers.	2
P2	Operations on complex numbers in trigonometric form.	2
P3	Brief historical information about the emergence of geometry.	2
P4	Flat geometric figures, their definition, properties and signs.	2
P5	Euler's theorem about polyhedra (prism, right-angled parallelepiped (cuboid), pyramid).	2
P6	Rotating solids (Cylinder, cone, sphere). Depiction of solids on a plane.	2
P7	Types of geometric problems, practical problems related to measurement: calculation problems,	2
P8	Methods of solving geometric problems: problems of proof and problems of construction	2
P9	Quantities and their measurement.	2
P10	Section length and its main properties.	2
P11	Methods of measuring the face of figures. Figures composed of congruent and equal figures.	2
P12	Measuring the mass and volume of an object.	2
P13	Time intervals and their measurement. Other quantities seen in an elementary math course: price (cost), time, speed, distance.	2
P14	Substitutions of concrete and concrete forms. Numerical equality and inequality, their properties. One variable equation and inequalities. Equivalent equations and inequalities.	2
P15	Text problems. Methods of solving text problems	2
Total		**30**
IV semester		
P1	The content and structure of mathematics teaching methodology in primary grades.	2
P2	Forms of organization of mathematics education in primary school. Teaching methods.	2

P3	Methods used according to the level of activity of students.	2
P4	Use interactive methods in elementary math lessons.	2
P5	Types of control in mathematics class and their organization, methods used by students in working with notebooks.	2
P6	Organization of extracurricular activities in elementary mathematics.	2
P7	The importance of teaching logical concepts and mathematical properties in primary grades.	2
P8	Features of teaching mathematics in schools with few sets.	2
P9	Number, stages of formation of the concept of counting.	2
P10	Methodology of teaching numbering in tens and hundreds.	2
P11	Methodology of teaching numbering of thousands and multi-digit numbers.	2
P12	Lesson organization, presentation and use of didactic materials. The role of mathematical dictation in teaching numeracy.	2
P13	Methodology for teaching the concepts of length, area and its measurement units. Solving problems related to length and surface measurement units.	2
P14	Methodology of formation of ideas about mass and volume in students, introduction to its measurement units. Solving problems related to units of measurement of mass and volume.	2
P15	Methodology of teaching concepts of time and its measurement units. solving problems related to units of measurement. Solving problems related to units of time measurement.	2
Total		**30**

Independent education (IE)		
III semester		
IE1	Complex numbers. Complex numbers, concept of abstract number. Arithmetic operations on complex numbers.	2
IE2	Geometric meaning and trigonometric form of complex numbers.	2
IE3	Brief historical information about the emergence of geometry. About Euclid's work "Fundamentals".	2
IE4	Flat figures and their properties	2
IE5	Polygons and rotating solids.	2
IE6	Euler's theorem about polygons.	2
IE7	Geometric figures, their definition, properties and signs.	2
IE8	Methods of solving geometric problems.	2
IE9	Prism, right-angled parallelepiped (cuboid).	2
IE10	Pyramid. Truncated pyramid	2
IE11	Rotating solids. Cylinder, cone, sphere.	2
IE12	Representation of solids on a plane.	2

IE13	About methods of solving geometric problems.	2
IE14	Types of geometric problems, practical problems related to measurement, problems related to calculation, problems related to proof and problems related to construction.	2
IE15	The concept of quantity and its types.	2
IE16	The faces of the figures. Methods of measuring the face of figures	2
IE17	Figures composed of congruent and equal figures.	2
IE18	Finding the faces of rectangles and other figures.	2
IE19	Mass of an object and its measurement. Properties of mass.	2
IE20	Volume of the body and its measurement and its properties.	2
IE21	Finding the volume of spatial figures: Pyramid, prism, (Cuboid), cone, cylinder, sphere.	2
IE22	Time intervals and their measurement. Other quantities seen in an elementary math course: price (price), time, speed, distance. Their measurement units and connections between them.	2
IE23	Weight issues.	2
IE24	Time issues.	2
IE25	Length issues.	2
IE26	Age issues.	2
IE27	Non-standard issues	2
IE28	Economic and statistical issues.	2
IE29	Logical issues.	2
IE30	Methods of solving equations.	2
Total		**60**
IV semester		
IE1	Methods used according to the level of activity of students.	8
IE2	Types of control in mathematics class and their organization, methods used by students in working with notebooks.	4
IE3	Methodology of teaching relationships between quantities and their measurement units in primary grades.	2
IE4	Teaching mathematics in specialized primary classes.	2
IE5	Number, stages of formation of the concept of counting.	2
IE6	The role of mathematical dictation in teaching numeracy.	4
IE7	Lesson organization, presentation and use of didactic materials.	4
IE8	Methodology of teaching non-negative integer numbering over 10, 100, 1000 and multi-digit numbers in elementary grades	8
IE9	Methodology of teaching concepts of length and area	4
IE10	Methodology of teaching the relationship between length measurement units in elementary grades.	2
IE11	Methodology of teaching the relationship between units of surface measurement in elementary grades.	2
IE12	Methodology of formation of students' ideas about volume,	6

	introduction to its measurement units.	
IE13	Methodology of formation of ideas about mass in students, introduction to its measurement units	2
IE14	Information about ancient units of measurement.	4
IE15	Studying the life and activities of Central Asian encyclopedist-scientists.	2
IE16	Use of historical materials on the topic of arithmetic operations. Revealing the history of the emergence of arithmetic operations.	2
IE17	To reveal the use of historical materials on the topic of arithmetic operations in mathematics lessons and extracurricular activities in elementary grades.	2
Total		**60**

VIII. Requirements for obtaining Credits:

Full mastery of theoretical and practical concepts related to science, ability to correctly reflect the results of analysis, independent observation of the studied processes, creativity and tasks and assignments given in writing or orally in current, intermediate control forms performance, final control test or written assignments.

IX. Criteria for evaluation and control of student knowledge in science

The educational results of students are evaluated in a 100-point rating system. The conversion of points by students according to the educational results is carried out on the basis of the ECTS (European Credit Transfer System) system.

Points for the assessment of educational results are determined in the following order:

For the completion of the tasks given in the audience training - current assessment (CA); Evaluation of independent work for the completion of independent educational tasks (IW);	For answering during the mid-term control - mid-term control score (MT);	Final exam score for responding during the final control (FE)
Maximal score of the Current control 15+15=***30 ball:*** ΣCC = CA + IW	***Maximal score of the Mid-term 20 ball:*** ΣMT = MT + IW	***Maximal score of the final exam (FE) 50 ball.***

A student with ΣCC + ΣMTS > 30 points is allowed to pass the final examination.

Mastery indicator from the module (subject).
(MI):
ΣMI = ΣCC + ΣMT + FE
If there are ΣMI ≥60 points, the module (subject) is considered mastered.

Criteria for evaluating students' educational results:

Degree	**5 point system (rating)**	**Appropriation is in percent**	**In traditional**	**Evaluation criteria**
For the educational board		**For professor-teacher**		
A+	**4,51 – 5**	91 - 100	Excellent	The student quickly learns the material independently: he does not make mistakes; actively participates in training; answers questions completely and clearly.
A	**4,26 – 4,5**	86 – 90		the student learns the materials independently: does not make mistakes; answers questions completely and clearly.
B+	**4,01–4,25**	81 – 85	Good	the student has mastered the material well, can express it logically; actively participates in training; answers questions completely and accurately, but makes minor mistakes.
B	**3,51 – 4,0**	71 – 80		the student has mastered the material well, answers questions completely and accurately, but makes minor mistakes.
C+	**3,26 – 3,5**	66 – 70	Satisfactory	knows basic material but struggles to express clearly; answers to questions lack accuracy and completeness; makes some mistakes in the presentation of materials; feels difficulty in the process of communication.

C	**3,0 – 3,25**	60 – 65		knows basic material but struggles to express clearly; answers to questions lack accuracy and completeness; makes some mistakes in the presentation of materials;
F	**3,0 dan kam**	Less than 59	dissatisfactory	did not master the materials; cannot answer questions; does not participate in training

Basic and additional educational literature and information sources

	Basic literatures
1.	Abdullayeva B.S., Sadikova A.V., Xamedova N.A., Muxitdinova N.M., Toshpulatova M.I. Boshlang'ich matematika kursi nazariyasi. Darslik. - Toshkent: "Tafakkur bo'stoni" nashriyoti, 2018 yil. 496 b.
2.	M.Musurmonova. Matematika o'qitish metodikasi. (òquv qòllanma) - Chirchiq: "Zebo prints", 2023-yil, 236 b.
3.	A.Xo'jayev, G.Tojiboyeva, E.Davletov, J.Mardonqulov / Boshlang'ichi sinflarda matematikani o'qitish metodikasi / Darslik. – Toshkent: Malik print co, 2021. – 220 bet.
4.	N.Otajonova, M.Raupova. Matematika òqitish metodikasi 2. (òquv qòllanma) "ZEBO PRINT", Toshkent, 2023.119 b
	Additional literatures
1.	Лещенко, Л.В.Л Целые неотрицательные числа: учебно-методические материалы / Л.В. Лещенко, Т.В. Гостевич. - Могилев: УО «МГУ им. А.А. Кулешова», 2011. - 56 с.: ил.
2.	Boshlangich sinflarda matematika o'qitish metodikasi: /M.Jumayev, - Toshkent: "Bayoz", 2022-yil. 272 bet.
3.	Jumayev M.E. Boshlang'ich sinflarda matematika o'qitish metodikasidan laboratoriya mashg'ulotlari. O'quv qo'llanma. Toshkent «Yangi asr avlodi» 2006.
4.	Tadjiyeva Z.G', Abdullayeva B.S., Jumayev M.E., Sidelnikova R.I., Sadikova A.V. Методика преподования математики, Toshkent, "Turon", 2011.
5.	L. O'. O'rinboyeva [va boshq.]. Matematika 2-sinf. O'qituvchilar uchun metodik qo'llanma – Toshkent: Respublika ta'lim markazi, 2021. – 160 b.
6.	Tadjiyeva Z.G'. Boshlang'ich sinflarda matematikadan dars samaradorligini oshirishda tarixiy materiallardan foydalanish. Toshkent. "TDPU" 2008. B 96.
7.	З.А.Наримбетова. Математика оқыту методикаси.Оқулық.Тошкент. "Yangi chirchiq prints" – 2024.-368 бет.
	Internet sources
1.	www.edu.uz - Website of the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.
2.	www.pedagog.uz
3.	www.cspi.uz
4.	www.pedagog.uz
5.	www.edu.uz
6.	www.natlib.uz (National library of Uzbeksitan named after A.Navoi)
7.	www.ziyonet.uz- portal of information and educational resources

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