Elementary Mathematics Education
Undergraduate Program

1st Semester

	Course Title	T	U	K	AKTS
MB	Introduction to Education	2	0	2	3
MB	Sociology of Education	2	0	2	3
GK	Ataturk's Principles and History of Turkish Revolution 1	2	0	2	3
GK	Foreign Language 1	2	0	2	3
GK	Turkish Language 1	3	0	3	5
GK	Information Technologies	3	0	3	5
AE	Fundamentals of Mathematics 1	2	0	2	2
AE	Analysis 1	2	0	2	3
AE	History of Mathematics	2	0	2	3
Total		20	0	20	30

2nd Semester

	Course Title	T	U	K	AKTS
MB	Educational Psychology	2	0	2	3
MB	Philosophy of Education	2	0	2	3
GK	Ataturk's Principles and History of Turkish Revolution 2	2	0	2	3
GK	Foreign Language 2	2	0	2	3
GK	Turkish Language 2	3	0	3	5
AE	Fundamentals of Mathematics 2	2	0	2	4
AE	Analysis 2	2	0	2	4
AE	Abstract Mathematics	2	0	2	5
Total		17	0	17	30

3rd Semester

	Course Title	T	U	K	AKTS
MB	Instructional Technologies	2	0	2	3
MB	Teaching Principles and Methods	2	0	2	3
MB	Elective 1	2	0	2	4
GK	Elective 1	2	0	2	3
AE	Elective 1	2	0	2	4
AE	Mathematics Learning and Teaching Approaches	2	0	2	3
AE	Linear Algebra 11	2	0	2	3
AE	Analytic Geometry	2	0	2	4
AE	Analysis 3	2	0	2	3
Total		18	0	18	30

4th Semester

	Course Title	T	U	K	AKTS
MB	History of Turkish Education	2	0	2	3
MB	Research Methods in Education	2	0	2	3
MB	Elective 2	2	0	2	4
GK	Elective 2	2	0	2	3
GK	Community Service Practices	1	2	2	3
AE	Elective 2	2	0	2	4
AE	Middle School Mathematics Curricula	2	0	2	3
AE	Linear Algebra 2	2	0	2	2
AE	Algorithms and Programming	2	0	2	2
AE	Probability	2	0	2	3
Total		19	2	20	30

5th Semester

	Course Title	T	U	K	AKTS
MB	Classroom Management	2	0	2	3
MB	Ethics and Morality in Education	2	0	2	3
MB	Elective 3	2	0	2	4
GK	Elective 3	2	0	2	3
AE	Elective 3	2	0	2	4
AE	Teaching of Numbers	3	0	3	5
AE	Teaching of Geometry and Measurement	3	0	3	4
AE	Statistics	2	0	2	2
AE	Algebra	2	0	2	2
Total		20	0	20	30

6th Semester

	Course Title	T	U	K	AKTS
MB	Measurement and Evaluation in Education	2	0	2	3
MB	Turkish Education System and School Management	2	0	2	3
MB	Elective 4	2	0	2	4
GK	Elective 4	2	0	2	3
AE	Elective 4	2	0	2	4
AE	Teaching of Algebra	3	0	3	5
AE	Teaching of Probability and Statistics	3	0	3	4
AE	Connections in Teaching Mathematics	3	0	3	4
Total		19	0	19	30

7th Semester

	Course Title	T	U	K	AKTS
MB	Teaching Practice 1	2	6	5	10
MB	Special Education and Inclusion	2	0	2	3
MB	Elective 5	2	0	2	4
AE	Elective 5	2	0	2	4
AE	Problem Solving in Mathematics	2	0	2	3
AE	Misconceptions in Teaching Mathematics	2	0	2	3
AE	Logical Reasoning	2	0	2	3
Total		14	6	17	30

8th Semester

	Course Title	T	U	K	AKTS
MB	Teaching Practice 2	2	6	5	12
MB	Guidance in Schools	2	0	2	3
MB	Elective 6	2	0	2	4
AE	Elective 6	2	0	2	4
AE	Philosophy of Mathematics	2	0	2	3
AE	Modeling in Teaching Mathematics	2	0	2	4
Total		12	6	15	30

	Grand Total	T	U	K	AKTS	HOURS	PERCENTAGE
MB	Vocational Knowledge	44	12	50	88	56	34
GK	General Culture	26	2	27	42	28	18
AE	Field Education	69	0	69	110	69	48
Total		139	14	146	240	153	100

Elementary Mathematics Education Undergraduate Program Course Descriptions

1st Semester

MB Introduction to Education

Basic concepts related to education and training; aims and functions of education; the relationship of education with other fields and sciences; legal, social, cultural, historical, political, economic, philosophical, and psychological foundations of education; method in educational sciences; school and classroom as an educational and learning environment; the teaching profession and current developments in teacher training; trends related to education in the twenty-first century..

MB Sociology of Education

Basic concepts of sociology: Society, social structure, social phenomenon, social event, etc.; pioneers of sociology (Ibn Khaldun, A. Comte, K. Marx, E. Durkheim, M. Weber, etc.) and their educational views; education in terms of major sociological theories (functionalism, structuralism, symbolic interactionism, conflict theory, critical theory, phenomenology, and ethnomethodology); social processes (socialization, social stratification, social mobility, social change, etc.) and education; social institutions (family, religion, economy, politics) and education; development of sociology and sociology of education in Turkey (Ziya Gökalp, İsmail Hakkı Baltacıoğlu, Nurettin Topçu, Mümtaz Turhan, etc.); culture and education; school as a social, cultural, and moral system and community..

GK Ataturk's Principles and History of Turkish Revolution 1

Internal and external reasons preparing the collapse of the Ottoman Empire; reform movements in the Ottoman Empire in the 19th century; currents of thought in the last period of the Ottoman Empire; political and military situation of the Ottoman Empire at the beginning of the 20th century; World War I and the Armenian issue; occupation of Anatolia and reactions; Mustafa Kemal Pasha's landing in Samsun and his activities; the congresses period and organization; opening of the last Ottoman Chamber of Deputies and acceptance of the National Pact (Misak-ı Millî); preparation for the National Struggle and the material and spiritual foundations of this preparation; opening and activities of the Grand National Assembly of Turkey (TBMM); Treaty of Sèvres; struggles on the Southern and Eastern fronts; establishment of the regular army, Greek offensive and battles on the Western front, signing of the Mudanya Armistice, gathering of the Lausanne Conference and signing of the Peace Treaty.

GK Foreign Language 1

Present continuous tense; simple present tense; oral, reading, writing, and listening skills in these tenses; oral skills (introducing oneself, describing something/place, giving directions, question and answer patterns for personal information); reading skills (reading lists/labels in restaurants, transportation vehicles like bus-train, shopping places, asking questions, etc.); writing skills (writing short messages, writing poster content, filling forms); listening skills (directions, place/person descriptions, etc.).

GK Turkish Language 1

Written language and its characteristics; spelling and punctuation; characteristics of written and oral expression; paragraph formation and paragraph types (introduction, development, conclusion paragraphs); ways of developing thought (explanation, discussion, narration, description; definition, exemplification, witnessing, comparison, etc. applications); text structure (structural characteristics of text, introduction-development-conclusion sections); textual characteristics (cohesion, coherence; intentionality, acceptability, situationality, informativity, intertextuality); text writing (drafting, writing, revising, and sharing); writing informative-explanatory texts; writing narrative texts; writing descriptive texts; writing argumentative and persuasive texts.

GK Information Technologies

Information technologies and computational thinking; problem-solving concepts and approaches; algorithms and flowcharts; computer systems; basic concepts related to software and hardware; fundamentals of operating systems, current operating systems; file management; utility programs (third-party software); word processing programs; calculation/spreadsheet/graphics programs; presentation programs; desktop publishing; database management systems; web design; internet use in education; communication and collaboration technologies; safe internet use; information ethics and copyrights; effects of computers and the internet on children/youth.

AE Fundamentals of Mathematics 1

Basic concepts and properties related to topics in numbers and algebra learning areas in the mathematics curriculum (natural numbers, operations with natural numbers, fractions, operations with fractions, decimal notation, percentages, factors and multiples, sets, integers, operations with integers, rational numbers, operations with rational numbers, ratio, ratio and proportion, exponential expressions, radical expressions, algebraic expressions, equality and equation, linear equations, algebraic expressions and identities, inequalities); the relationship of these concepts with each other, discussion of mathematical concepts, and converting them to each other using multiple representations.

AE Analysis 1

Sets and number systems; relation, types of functions, exponential functions and logarithmic functions; limit, continuity concepts and applications; derivative, applications of derivative and graph drawing.

AE History of Mathematics

The place of history of mathematics in mathematics education; Ancient Egyptian mathematics; Ancient Greek mathematics; Far East mathematics; mathematicians of the Islamic world; the birth of modern mathematics; historical development of mathematical concepts.

2nd Semester

MB Educational Psychology

Basic concepts of psychology and educational psychology; research methods in educational psychology; development theories, development areas, and development processes; individual differences in development; basic concepts related to learning; factors affecting learning; learning theories within the framework of education-learning processes; motivation in the learning process.

MB Philosophy of Education

Basic topics and problem areas of philosophy; ontology, epistemology, axiology/ethics and education; basic philosophical currents (idealism, realism, naturalism, empiricism, rationalism, pragmatism, existentialism, analytical philosophy) and education; philosophy of education and educational currents: Perennialism, essentialism, progressivism, existentialist education, critical/radical education; educational views of some philosophers in the Islamic world and the West (Plato, Aristotle, Socrates, J. Dewey, Avicenna, Farabi, J. J. Rousseau, etc.); human nature, individual differences, and education; education in terms of some political and economic ideologies; currents of thought influential in the modernization process in Turkey and education; philosophical foundations of the Turkish education system.

GK Ataturk's Principles and History of Turkish Revolution 2

Revolutions in the political field (Abolition of the Sultanate, Proclamation of the Republic, Abolition of the Caliphate, etc.); revolutions in the social field (Hat revolution, Closure of dervish lodges and zawiyas, Calendar, Time and Surname Law); revolutions in the field of education and culture (Law on Unification of Education, Alphabet revolution, Turkish History and Language revolution); revolutions in the field of law; attempts to transition to multi-party life in the Ataturk era and reactions (Establishment and closure of the Progressive Republican Party, Sheikh Said rebellion and assassination attempt on Ataturk); attempts to transition to multi-party political life in the Ataturk era (Establishment and closure of the Free Republican Party and Menemen Incident); Turkey's economic resources and policy in the Republican era (Izmir Economic Congress); Turkish foreign policy in the Ataturk era (Population Exchange, Membership to the League of Nations, Balkan Entente and Saadabad Pact); Turkish foreign policy in the Ataturk era (Montreux Convention Regarding the Regime of the Straits, Hatay's accession to the Motherland, Turkey's bilateral relations with other countries); definition and scope of Ataturk's thought system and Ataturk's principles; Turkey after Ataturk, years of Democratic Party rule, Turkey in the 1960s and 1970s, Turkey's foreign policy after 1960.

GK Yabancı Dil 2

Past tense; future tense; modals (can, could, may, must, etc.); speaking, reading, writing, and listening skills in these tenses and modals; oral skills (asking questions in restaurants, ordering food, etc.); reading skills (internet weather reports, recipes, banner/poster texts, etc.); writing skills (writing short messages, giving written directions, writing emails/invitations, etc.); listening skills (weather report, recipes, etc.).

GK Turkish Language 2

Characteristics of academic language and writing; using definitions, concepts, and terms in academic writings; objective and subjective expression; structure and types of academic texts (article, report, scientific abstract, etc.); writing claims and propositions (verifying, defending, or opposing an idea); formal characteristics of scientific reports and articles; steps of report writing; explanation, discussion, establishing intertextual relationships, citing sources (citing and footnoting, creating bibliography); writing titles, summarizing, writing keywords; ethical principles to be considered in scientific writings; academic text writing applications.

AE Fundamentals of Mathematics 2

Basic concepts and properties related to topics in geometry, statistics, and probability learning areas in the mathematics curriculum (basic geometric concepts and drawings, triangles and quadrilaterals, triangles, measuring length and time, measuring area, geometric solids, angles, lines and angles, circle, circle and disk, measuring liquid, transformation geometry, polygons, views of objects from different directions, congruence and similarity, data collection and evaluation, data analysis, probability of simple events), the relationship of these concepts with each other, discussion of mathematical concepts, and converting them to each other using multiple representations.

AE Analysis 2

Trigonometric functions, trigonometric relations, solutions of trigonometric equations; complex numbers and their properties; Riemann sum, definite integral, indefinite integral, methods of integration, applications of the integral, improper integrals, series and convergence tests.

AE Abstract Mathematics

Symbolic logic and proof techniques; sets, algebra of sets, families of sets, partitions of families of sets, Cartesian products; relations, inverse of a relation, composition of relations, equivalence relations and equivalence classes, ordering relations; partial ordered set, totally ordered set; functions, one-to-one and onto functions, composition of functions, inverse of functions, permutations, operations

3rd Semester

MB Instructional Technologies

Information technologies in education; teaching process and classification of instructional technologies; theoretical approaches to instructional technologies; new trends in learning approaches; current literacies; instructional technologies as tools and materials; design of instructional materials; designing thematic instructional materials; creating domain-specific object repositories, evaluation criteria for instructional materials.

MB Teaching Principles and Methods

ÖBasic concepts related to teaching principles and methods; teaching-learning principles, models, strategies, methods, and techniques; setting goals and objectives in teaching; content selection and organization in teaching and learning; instructional materials; planning of instruction and lesson plans; theories and approaches related to teaching; teaching, learning, and success in learning in effective schools; assessment of in-class learning..

AE Mathematics Learning and Teaching Approaches

The nature of mathematics and mathematical thinking; the meaning of learning and teaching mathematics; the aim and basic principles of mathematics teaching; history of mathematics teaching; reflections of learning and teaching approaches on mathematics teaching; basic skills in mathematics teaching; in-class application examples; current trends and issues in mathematics teaching; components of effective mathematics teaching; social, cultural, and economic perspectives on mathematics teaching.

AE Linear Algebra 1

Matrices, operations on matrices, special types of matrices; elementary operations, echelon matrix, elementary matrices and the inverse of a matrix, rank of a matrix; determinant, properties of the determinant function; linear systems of equations, methods for solving linear systems of equations (Gaussian elimination, Gauss-Jordan reduction, inverse matrix, and Cramer's rule).

AE Analytic Geometry

Cartesian coordinates in the plane and space; vectors in the plane and space; lines in the plane; lines and planes in three-dimensional space; reflections with respect to lines and planes; point-line, line-plane, and plane-plane relationships; translation and rotation in the plane.

AE Analysis 3

Multivariable functions; topology of IRn, limit, continuity, sequences and series of functions; derivative, directional derivative, partial derivative, geometric interpretation of partial derivative, higher-order derivatives, and the chain rule..

4th Semester

MB History of Turkish Education

Subject, method, and sources of the history of Turkish education; education in the first Turkish states; education in the first Muslim Turkish states; education in the Seljuks of Turkey and Anatolian Beyliks; education in the Ottoman Empire: education system until the first reform movements; education in Turkish states outside the Ottoman geography in the 13th-18th centuries; reform movements in education in the Ottoman Empire until the Tanzimat; establishment of the modern education system from Tanzimat to the Republic; reorganization of traditional education; education in other Turkish states and communities in Eurasia in the 19th-20th centuries; education during the National Struggle period; education in the Republic of Turkey: foundations, structure, establishment, and development of the Turkish education system; teacher training process from the beginning to the present; education in the Turkic world in the 21st century; common goals, language and alphabet unity, joint history writing efforts..

MB Research Methods in Education

Basic concepts and principles related to research methods; research process (noticing the problem, determining the problem and sample, data collection and analysis, interpreting results); general characteristics of data collection tools; analysis and evaluation of data; access to articles, theses, and databases; research models and types; basic paradigms in scientific research; quantitative and qualitative research designs; sampling, data collection, data analysis in qualitative research; validity and reliability in qualitative research; reviewing, evaluating, and presenting articles or theses; preparing a research report in accordance with research principles and ethics; action research in education.

GK Community Service Practices

Concepts of society, community service practices, and social responsibility; social responsibility projects in terms of social and cultural values; identifying current social problems; preparing projects for the solution of identified social problems; voluntarily taking part in social responsibility projects individually and as a group; participating in social responsibility projects in various institutions and organizations; participating in scientific activities such as panels, conferences, congresses, symposiums as an audience, speaker, or organizer; evaluating the results of social responsibility projects.

AE Middle School Mathematics Curricula

ÖBasic concepts related to curricula; development of middle school mathematics curricula from past to present; the approach, content, and skills aimed to be developed by the current middle school mathematics curriculum; learning and sub-learning areas; distribution and limits of learning outcomes according to grades, relation with other courses; the relationship of the middle school mathematics curriculum with primary and high school mathematics curricula; methods, techniques, tools, and materials used; measurement and evaluation approach; teacher competencies.

AE **Lineer Cebir** Linear Algebra 2

Vector spaces, subspaces, linear independence, linear combinations; spanning, basis, and dimension; linear transformations, kernel and image of a linear transformation; isomorphisms, eigenvalues, and eigenvectors; characteristic polynomials; diagonalization, inner product spaces, orthogonality of vectors, orthonormal vector sets.

AE Algorithms and Programming

Algorithm design; flowcharts, input-output concepts, loops, decision structures, developing algorithms suitable for decision-making and cyclic problems; applications of programs (such as Scratch, code.org) where algorithms and flowcharts are used visually; creating suitable solution algorithms using functions; developing suitable solution algorithms using single and multi-dimensional arrays; coding and applications of created algorithms in Computer Algebra Systems.

AE Probability

Fundamental principle of counting; permutation concept and applications; combination concept and applications; binomial theorem, probability concept, basic concepts related to probability and probability axioms; conditional probability and Bayes' theorem; geometric probability problems; random variable concept; probability function, probability density function; expected value and variance of random variables; moment generating function and moments; some discrete distributions, Bernoulli, binomial, geometric, hypergeometric, Poisson distributions; some continuous distributions, uniform distribution, exponential distribution, normal distribution and its properties.

5th Semester

MB Classroom Management

Basic concepts related to classroom management; physical, social, and psychological dimensions of the classroom; classroom rules and discipline in the classroom; models related to classroom discipline and management; management of student behavior in the classroom, communication and interaction process in the classroom; student motivation in the classroom; time management in the classroom; teacher as an instructional leader in the classroom; management of teacher-parent meetings; creating a positive classroom and learning climate; case studies related to classroom management according to school levels.

MB Ethics and Morality in Education

Basic concepts and theories related to morality and ethics; ethical principle, ethical rule, business and professional morality/ethics; the teaching profession with its social, cultural, moral, and ethical aspects; right to education and learning, ethical principles in the process of education, instruction, learning, and assessment; ethical principles in relationships with education stakeholders (employers/administrators, colleagues, parents, professional organizations, and society); moral/ethical responsibilities of education/school administrators, parents, and students; unethical behaviors in business and professional life; ethical regulations related to public administration, education, and teachers in Turkey; unethical behaviors in school and education, ethical dilemmas, problems, and solutions; morality/ethics education in school and ethics committees; school principal and teacher as a moral/ethical leader.

AE Teaching of Numbers

Establishing a number system, natural numbers, operations with natural numbers, numbers with different bases, integers, factors and multiples, divisibility rules, GCD and LCM concepts and applications; ratio, proportion concepts and applications; real numbers, exponential and radical quantities, fractions, decimal notations, percentages; rational and irrational numbers; teaching of sets and basic concepts related to sets (organizing course content-using appropriate teaching materials and strategies, etc.); student knowledge related to these topics (understanding and interpreting student thinking regarding concepts, knowing student difficulties, errors, misconceptions, and their causes); relationship of these topics with daily life and other subjects.

AE Teaching of Geometry and Measurement

Van Hiele thinking levels; basic geometric concepts, geometric structures, geometric solids; congruence and similarity; transformation geometry, projection, patterns and tessellations, fractals; Pythagorean theorem; nature of measurement, teaching of time, length, area, volume, and angle measurement topics (organizing course content-using appropriate teaching materials and strategies, etc.); student knowledge related to these topics (understanding and interpreting student thinking regarding concepts; knowing student difficulties, errors, misconceptions, and their causes); relationship of these topics with daily life and other subjects.

AE Statistics

Sampling, organization and analysis of data; sampling distribution and estimation; concept of confidence interval; interval estimation for the difference of two population means, interval estimation for the ratio of two population variances, interval estimation for binomial parameter p; hypothesis tests, correlation, and regression.

AE Algebra

İBinary operations, definition of group and basic properties, subgroups, permutation groups, cyclic groups, symmetry group of regular n-gon, cyclic permutations, odd and even permutations, homomorphisms, Cosets and Lagrange's theorem, isomorphism theorems, action of a group on a set, rings, subrings and ideals, prime and maximal ideals, ring homomorphisms, arithmetic in rings, polynomial rings, fields; Burnside theorem and applications, p-groups and related theorems, simplicity of A_n for n>4.

6th Semester

MB Measurement and Evaluation in Education

The place and importance of measurement and evaluation in education; basic concepts related to measurement and evaluation; psychometric properties of measurement tools (validity, reliability, usability); developing and administering achievement tests; interpreting test results and providing feedback; analysis of test and item scores; evaluation and grading.

MB Turkish Education System and School Management

Formation of education systems and structure of the Turkish education system; basic laws regulating the Turkish education system; central, provincial, and overseas organization of the Ministry of National Education; educational levels in the Turkish education system; manpower, physical, technological, and financial resources in the Turkish education system; reform and innovation initiatives in the Turkish education system; organization-management theories and processes; school as a social system and organization; management of human resources; student personnel affairs; affairs related to education and instruction; affairs related to school business management; school, environment, society, and family relations; current discussions and trends regarding the Turkish education system and school.

AE Teaching of Algebra

Algebraic thinking, importance of algebraic thinking in mathematics teaching; pre-algebra period; arithmetic-algebra relationship; generalized arithmetic and functional thinking; basic algebra concepts; different representations in algebra teaching; teaching of variable, algebraic expression, equality and equation, linear equations, identities, and inequalities topics (organizing course content, using appropriate teaching materials and strategies, etc.); student knowledge related to these topics (understanding and interpreting student thinking regarding concepts, knowing difficulties experienced by students, their errors, misconceptions, and their causes); relationship of these topics with daily life and other subjects.

AE Teaching of Probability and Statistics

Basic concepts related to probability, types of probability, probability simulations, and probability distributions; teaching of data collection, organizing, displaying, and analyzing data, distribution concept, frequency distributions, measures of central tendency, and measures of dispersion topics (organizing course content-using appropriate teaching materials and strategies, etc.); student knowledge related to these topics (understanding and interpreting student thinking regarding concepts, knowing difficulties experienced by students, their errors, misconceptions, and their causes); relationship of these topics with daily life and other subjects.

AE Connections in Teaching Mathematics

.Establishing relationships between concepts and operations; expressing mathematical concepts and rules with different forms of representation; relating different mathematical concepts to each other; relating mathematics to other subjects; relating mathematics to daily life.

7th Semester

MB Teaching Practice 1

Making observations regarding field-specific teaching methods and techniques; conducting individual and group micro-teaching applications using field-specific special teaching methods and techniques; developing field-specific activities and materials; preparing instructional environments, managing the classroom, making measurements, evaluations, and reflections.

MB Special Education and Inclusion

Basic concepts related to special education; principles and historical development of special education; legal regulations related to special education; diagnosis and evaluation in special education; individualization of instruction; inclusion and support special education services; family participation in education and cooperation with the family; characteristics of different disability and ability groups; educational approaches and instructional strategies for different groups; effective strategies in classroom management and behavior management.

AE Problem Solving in Mathematics

Problem and problem solving, problem types, importance of teaching problem solving, recent developments regarding problem solving, mathematical problem-solving strategies, and importance of multiple representations in problem solving; problem examples solvable with different problem-solving strategies, evaluation of problem solving; definition, process, characteristics, and importance of problem posing, classifications of problem posing, problem-posing strategies, conducting different problem-posing studies; problem posing in middle school mathematics curriculum and textbooks; evaluation of problem posing.

AE Misconceptions in Teaching Mathematicsv

Mathematical error, difficulty, and misconception; types of misconceptions, mathematical concepts, and common misconceptions related to these concepts in the literature; inquiry techniques to reveal middle school students' thinking processes; generating solution suggestions regarding misconceptions according to the characteristics of the subject area and individual differences of students..

AE Logical Reasoning

ÇıDefending the truth and validity of inferences; making logical generalizations and inferences; explaining and using mathematical patterns and relationships while analyzing a mathematical situation; making estimates about the result of operations and measurements using strategies such as rounding, grouping compatible numbers, using first or last digits, or using strategies they developed themselves; making estimates regarding measurement by taking a specific reference point into account.

8th Semester

MB Teaching Practice 2

Making observations regarding field-specific special teaching methods and techniques; conducting micro-teaching applications using field-specific special teaching methods and techniques; planning a lesson independently; developing activities and materials related to the lesson; preparing instructional environments; managing the classroom, making measurements, evaluations, and reflections.

MB Guidance in Schools

The place of guidance and psychological counseling (GPC) services in education; philosophy, aim, principles, and program of the developmental guidance model (comprehensive developmental GPC program); basic services/interventions; role and function of teachers in classroom guidance; competencies to be gained in educational, vocational, personal, and social areas within the scope of GPC services; cooperation between school administrator and teachers and guidance teacher and psychological counselor; preparation and implementation of classroom GPC plans and programs.

AE Philosophy of Mathematics

Ontology and epistemology of mathematics; numbers, sets, functions, etc. mathematical concepts and meanings of propositions and mathematical expressions; philosophical problems regarding foundations, methods, and nature of mathematics, objectivity in mathematics, and applicability to the real world; works of pioneers of philosophy of mathematics such as Frege, Russell, Hilbert, Brouwer, and Gödel; concept of flatness and dimension, basic theories in philosophy of mathematics: Logicism, Formalism, and Intuitionism, quasi-empiricists and Lakatos; relationship of philosophy of mathematics with mathematics education; social groups in mathematics education philosophy.

AE Modeling in Teaching Mathematics

Mathematical modeling and problem solving; models and modeling process in mathematics teaching; modeling cycle (defining the problem, manipulation, prediction, and verification), model development steps; model development principles; implementation of modeling activities in mathematics classrooms and the role of the teacher; preparing mathematical modeling activities and monitoring students' mathematical thinking processes.

MB

VOCATIONAL KNOWLEDGE ELECTIVE COURSES

Open and Distance Learning

Basic concepts and philosophy of open and distance learning; development of distance education in the world; development of distance education in Turkey; learner and guide roles in distance education; technologies used in distance education; management of open and distance education; classroom management and its components in open and distance learning; open education resources and global trends; massive open online courses; personalized learning environments; problems related to open and distance education and their solutions; open and distance education practices in teacher training; developing individual instructional materials and student support services in open and distance education; determining instructional strategies for different learning situations; research and evaluation in distance education .

Child Psychology

Basic concepts, history, and methods of child psychology; prenatal development; developmental areas and characteristics of infancy period; developmental areas and characteristics of early childhood period; developmental areas and characteristics of late childhood period; child within the family structure; child within the school system; adjustment and behavioral problems in childhood period; children with special needs .

Attention Deficit and Hyperactivity Disorder

Definition and characteristics of Attention Deficit and Hyperactivity Disorder (ADHD); basic symptoms of ADHD (inattention, hyperactivity, and impulsivity); effects of ADHD on the child in terms of social, emotional, and school success; causes of ADHD; risk factors in the formation of ADHD; types of ADHD; approaches to children with ADHD; guidance of students with ADHD; education of children with ADHD; ensuring school-family cooperation .

Education Law

Basic concepts of law and administrative law; sources of administrative law; rights and duties in administration; Convention on the Rights of the Child and Universal Declaration of Human Rights; administrative and judicial supervision of teachers; basic laws establishing and regulating the Turkish Education System; duties, rights, and responsibilities of education stakeholders

Educational Anthropology

Subject, basic concepts, history, and method of anthropology; basic approaches in socio-cultural anthropology; basic concepts of educational anthropology from an anthropological perspective: Culture, enculturation, acculturation, adaptation, subculture, counterculture, common culture, etc.; cultural foundations and functions of education; intercultural differentiation, education, and learning; school as a living space, school cultures, and ethnographies; media, mass communication tools, popular culture, and education; globalization, cultural interaction, cultural literacy, and education; education in oral and written literary works in Turkish culture and civilization history; roles of parents and children in Turkish family structure .

History of Education

Education in the Ancient period (in Ancient Egypt, Mesopotamia, Anatolia, India, China, Ancient Greek and Roman civilizations); education in Eastern, Western, and Islamic societies in the Middle Ages and New Age; Renaissance, Reform, Enlightenment Movements and education; education in the Industrial Age and Modern Period; relations of Islamic culture and civilization with Western civilization; emergence of national/nation states and development of national education systems; post-modern society discussions and education; fundamental changes and transformations in education in the world from the Ancient period to the present .

Drama in Education

Basic concepts of drama and creative drama (drama, creativity, creative drama, play and theater pedagogy, communication-interaction, role playing, improvisation, action, dramatic play, children's theater, puppet, pantomime, etc.); stages, dimensions, and elements of creative drama; role playing and improvisation; history of creative drama; relationship between social events and creative drama; application steps of drama in education; resources to be used in drama in education; preparation and implementation of creative drama lesson plan; contribution of drama to individual and social development .

Extracurricular Activities in Education

Formal curriculum and extracurricular activities/hidden curriculum concepts in education; approaches regarding hidden curriculum; cognitive and affective domain learning and hidden curriculum; school as a ritual place; school ceremonies as extracurricular activities in school; importance and management of social, cultural, sports, and artistic activities in school; place and importance of hidden curriculum in values education; extracurricular activities (commemoration, celebration, meeting, graduation, etc.) in terms of values education .

Curriculum Development in Education

Basic concepts related to curriculum development; theoretical foundations of curriculum development; types of programs; philosophical, social, historical, psychological, and economic foundations of curricula; characteristics of curriculum development and curricula; stages of curriculum development; basic elements of the curriculum (objective, content, process, evaluation) and relationships between elements; classification of objectives and their relationship with curriculum elements; content organization approaches; determination of educational needs; curriculum development process and models; curriculum design approaches; curriculum evaluation models; curriculum literacy; duties and responsibilities of teachers in curriculum development; characteristics of MoNE curricula; implementation of curricula; new approaches and trends in curriculum development in the world and in Turkey .

Project Preparation in Education

Project concept and project types; curricula and project-based learning; project programs in schools (TÜBİTAK, EU, and others); topic selection for the project; literature review; logical framework in the project; planning and management of the project; application of scientific method in the project; preparing and developing project report; finalizing project report; project evaluation and examination of good examples; project presentations, poster and brochure design techniques .

Critical and Analytical Thinking

Basic concepts and definitions; brain as a thinking organ, thinking styles, and classification of thinking; involuntary thinking and its characteristics; voluntary thinking and its characteristics; methods of voluntary thinking; critical and analytical thinking; basic characteristics and criteria of critical and analytical thinking, stages of critical and analytical thinking; factors affecting critical and analytical thinking; scope of critical and analytical thinking; critical and analytical reading; critical and analytical listening; critical and analytical writing .

Education of Hospitalized Children

Developmental characteristics, interests, needs, and mental states of hospitalized children according to age groups; interaction between hospital staff, child, and family; preparatory education for hospitalization, diagnosis, treatment, and preparation for surgery; preparing and implementing activity plans such as games, music, art, drama, math, stories, etc. for hospitalized children; interaction between hospital schools and children with terminal illnesses, their families, and staff .

Inclusive Education

Inclusion and content of inclusion; inclusive education: definition, content, and importance; legal bases of inclusive education; national and international legislation; approaches and standards in inclusive education; teacher roles in inclusive education; inclusive curriculum and materials; attitudes and values in inclusive education; inclusive school and classroom; preparing an action plan for inclusive education; inclusive education practices: characteristics differentiating students, effective communication, language used, psychosocial support, differentiating instruction and examples, methods and techniques, planning instruction, inclusiveness in course materials and selection of inclusive activities; lesson design practices ..

Character and Values Education

Conceptual framework: Character, personality, value, virtue, morality, temperament, etc.; character development and education; family, environment, and school in character development and education; definition and classification of values; sources of values and individual, social, cultural, religious, moral foundations; character and values education approaches and practices; intercultural differentiation and coexistence culture in character and values education; character and values education in terms of philosophy of education and objectives; teaching methods and techniques in character/values education; values crisis and education in modern and multicultural societies; values education in the process of human-cultural development; examples related to values education from Turkish education and cultural history, values education practices and research in Turkey; teacher as a role model in character and values education .

Comparative Education

Definition, scope, and history of comparative education; method and research in comparative education; comparison of education systems of different countries in terms of structure, operation, school levels, human resources, financing of education, privatization in education, policy making, planning, and implementation in education; gender, social justice, and equality in education in different countries; reform and innovation initiatives in education in different countries; teacher and education/school administrator training systems in different countries; globalization and internationalization in education; international exams, institutions, and organizations related to education .

Micro Teaching

Basic concepts and principles related to effective teaching; professional competencies, attitudes, roles, and behaviors of teachers; preparing lesson plans; scope, benefits, and limitations of micro-teaching method; preparing active learning activities suitable for the subject; sample lecture practices in the classroom; video recording of lesson presentations; evaluating the lesson using recordings; improving prepared activities and lectures .

Museum Education

Definition and characteristics of museums, exhibition in museums; museum and museum education; types of museums; development of Turkish museology; a general overview of the history of museology in the world; relationship between museum, art, culture, and civilization; museum and art education; museum and society; contribution of museums to historical consciousness; claiming historical artifacts; contemporary museology in the World and Turkey ..

Out-of-School Learning Environments

Concepts of out-of-school education and learning; scope and importance of out-of-school learning; instruction in out-of-school environments; teaching methods, techniques (project-based learning, station technique, etc.) and instructional materials suitable for out-of-school learning environments; out-of-school learning environments (museums, science centers, zoos, botanical gardens, planetariums, industrial establishments, national parks, science festivals, science camps, natural environments, etc.); developing out-of-school learning areas and environments; planning, implementation, and evaluation of out-of-school learning activities .

Learning Disability

ÖDefinition, characteristics, and classification of learning disability: Educational, psychological, medical factors; prevalence and incidence; causes of learning disability; early intervention; response to intervention model; screening/diagnosis: medical, developmental, and educational screening/diagnosis; academic and non-academic characteristics; team and collaboration; educational environments; scientifically based practices; supporting reading, writing, and mathematics skills; supporting non-academic skills .

Individualization and Adaptation of Instruction

Concept of individualization and its importance in education; requirements for individualization: curriculum-based assessment, rough assessment, preparing criterion-referenced measurement tools, rules to be followed in assessment; determining long-term and short-term instructional objectives; arrangements that can be made in classrooms and schools for inclusion/integration; adapting instruction; examples of individualization and adaptation in inclusion/integration classrooms .

Sustainable Development and Education

Concept of sustainability and its areas of use; sustainability in terms of social sciences and natural sciences; sustainability in the context of social change; education and sustainability; future of humanity and sustainability; migration, poverty, and inequality; sustainable environment; ecology, global environmental problems, and sustainability; sustainable society in harmony with nature; population, economic system, and natural environment; technological developments, consumption habits, and environment; social responsibility studies, sustainability in terms of tangible and intangible cultural heritage; rethinking human-nature relationships on the axis of sustainability .

Adult Education and Lifelong Learning

Definition and scope of adult education; concepts related to adult education (continuous education, public education, non-formal education, vocational education, etc.); historical development of adult education in Turkey; approaches and models related to adult education; adults and learning; aim, scope, and historical development of lifelong learning; lifelong learning practices in the Turkish education system .

GK

GENERAL CULTURAL ELECTIVE COURSES

Addiction and Combating Addiction

Basic concepts and definitions; types of addiction (substance addiction, technology addiction, etc.); causes of addiction; risk factors in family, peer group, and social context that prepare the person for the substance addiction process; communication skills in addicted children, adolescents, and adults; role of social work in addiction; models related to addiction; efforts to prevent addiction; consequences of addiction; national policy and strategy methods in combating addiction; readjustment process .

Nutrition and Health

Natural and healthy nutrition; combating obesity; food additives; healthy life and exercise; growth and development; healthy sexual life; combating addiction (tobacco, alcohol, substance addiction, etc.); traffic, disaster, and first aid .

History and Philosophy of Science

Science, philosophy, scientific method; science in Ancient Greece, Medieval Europe, Scholastic philosophy and science; science and philosophy in Islamic cultural geography; science in Mesopotamia; science and philosophy in Renaissance Europe; science and philosophy in the Age of Enlightenment; classification of sciences; relationships between science, scientism, ideology, ethics, and religion; science and paradigms; Vienna and Frankfurt schools of thought; critiques of science in the twentieth and twenty-first centuries .

Science and Research Ethics

Science, nature of science, development, and scientific research; concept of ethics and ethical theories; research and publication ethics; unethical behaviors and ethical violations in the research process; ethical problems related to authorship and copyright; biased publication, editorship, refereeing, and ethics; publication ethics and unethical behaviors in the publication process; legal legislation and committees related to research and publication ethics; ways to follow in detecting ethical violations; frequently seen research and publication ethics violations and methods to prevent them.

Economy and Entrepreneurship

Basic concepts of economics and economic systems; basic concepts of business and business management; establishment, objectives, and legal structure of the business; management processes and functions in businesses; management of human resources and other resources; entrepreneurship and entrepreneur concepts, success factors in entrepreneurship; entrepreneurship culture, entrepreneurship process, and types of entrepreneurship; career planning, original ideas, extraordinary examples; Turkish Patent and Trademark Office; Industrial Property Law; small and medium-sized enterprises; management processes and functions in small businesses; business idea development, novelty and innovation, making a business plan, elements, writing, and presentation of a business plan; preparing a project related to entrepreneurship in a specific field and subject .

Traditional Turkish Handicrafts

Terms and concepts related to traditional Turkish arts; importance of traditional Turkish arts; contributions to the individual, society, and national economy; historical development of Traditional Turkish arts (Huns, Göktürks, Uyghurs, Seljuks, Beyliks, and Ottoman Period); Ahilik (Ahi Community) and Guild Organization; institutions and organizations related to Turkish arts in the Republican era; classification of traditional arts according to raw materials and production techniques; traditional weaving (carpet-rug, fabric, etc.), printing, knitting, felt, glass (stained glass, glassware, beads, etc.) arts; metal (iron, copper, silver, and gold, etc.) arts; wood (kundekari, carving, and mother-of-pearl inlay) arts; tile-ceramic and stone carving arts; education, production, and marketing of traditional Turkish arts .

Human Rights and Democracy Education

Concept and historical development of human rights; types of human rights; understandings, principles, approaches of democracy and human rights; democracy education and democratic education; family and democracy education; education as a human right; preschool education and democracy education; primary school curriculum and democracy education; democracy education in secondary education; higher education and democracy education; democratic school and classroom environment .

Human Relations and Communication

Definition and classification of interpersonal relations; theoretical approaches related to interpersonal relations (psychoanalytic, attachment, contemporary theories); theoretical approaches related to interpersonal relations (social, psychological, cognitive theories); interpersonal relations as a developmental process (infancy and childhood periods, adolescence and adulthood periods); factors effective in interpersonal relations; gender, gender roles, and interpersonal relations; self-adaptation and self-disclosure in interpersonal relations; communication and communication errors; effective communication skills; interpersonal problems, conflict, and conflict resolution approaches; human relations in terms of intercultural differentiation .

Career Planning and Development

Concept of career, career planning and its stages; individual career development, creating career strategy; career planning model, career options in relevant teaching fields; preparing a resume and types of resumes, CV format and examples, points to consider in CV preparation; cover letters, introduction letters, job interview, objectives, methods and types, preparation for interview and interview stages; situations that may be encountered in interviews; question types, body language-bodily signs .

Culture and Language

Basic concepts related to language and culture; sources and elements of culture; oral and written culture; material and spiritual culture; culture from individual and social perspectives; culture as a unifier and separator; enculturation, acculturation, cultural diffusion, and adaptation; culture in terms of cognitive, symbolic, structural-functional approaches; language as a system of symbols; language and language acquisition from an individual perspective; effect of language on human consciousness; relationship between culture, language, cognition, and reality; function of language in conveying knowledge and culture, establishing social relationships and communication; development and transmission of language and culture; national identity and language; dynamics of changes in culture and language; discussions on the mutual interaction of changes in culture and language; national cultures; globalization, multilingualism, and multiculturalism .

Media Literacy

Information literacy; conscious use of the internet and social media; effects of social media on individuals; power of disseminating information and disinformation; power of disseminating news; media and perception management; legal rights and responsibilities regarding media and the internet; copyright; personal rights; data privacy; breach of privacy; language use in media; value and quality analysis of news; popular culture; gender roles in media; consumer culture and advertisements; stereotyping in media .

Professional English

Basic English reading-writing-listening skills; basic concepts related to child development and stages; basic concepts related to basic education and secondary education; basic concepts related to educational sciences; examples of dialogue between student-parent-teacher; listening and comprehension techniques for academic texts (youtube, teachertube, tedx talks, etc.); verbal skills for professional development (vocabulary, patterns, etc.); writing skills (writing petitions, preparing reports, creating CVs, writing short messages, creating lesson objectives, etc.); reading skills (reading written texts using web 2.0 tools, etc.); translation studies in the relevant teaching field .

Art and Aesthetics

Art, fine arts, craft, and culture; art and education; art, creativity, and artwork; philosophy of art and aesthetics; art and aesthetic theories; art criticism; art history, art in pre-modern, modern, and post-modern periods; art and social context; art and daily life; Turkish-Islamic art-aesthetics and artworks; position of art and the artisan in the process of social change; development of art in Turkey; contemporary art understandings; civilization building and art; art, aesthetics, and morality .

Turkish Folk Dances

Definition of folklore; rhythm and perception studies, dance and folk dance- figure studies; regional differences in folk dances, figure studies, regional figures, learning "bar" type regional figures, learning "halay" and "spoon" type regional figures, learning "horon" and "karşılama" type regional figures, learning "zeybek" type regional figures; studies on the attitude and playing styles of learned dances; staging of folk dances, staging types and differences .

Turkish Sign Language

Basic concepts related to sign language; Turkish sign language, history, and characteristics; letters in Turkish sign language; phonology; internal structure of the sign, simultaneity and sequentiality; manual alphabet in terms of phonology; morphology in sign language, formation and shaping of the sign; word classes and pronouns; syntax in sign language; word order, sentence types; question sentences; semantics in sign language; meaning and reference, meaning types, idioms; conversation in Turkish sign language .

Cultural Geography of Turkey

Culture, human, and society; Turkish culture and Turkish civilization; first ethnographic sources about Turks; Turkish states in history; state, administrative, military, and social structure in Turks; folk beliefs and mythology in Turks; human and space relationship in Turks; oral, written, and material culture in Turks; family structure in Turks; demographic and cultural consequences of migrations in Turkish history; expansion areas of Turkish culture and its effect on neighboring geographies; tangible and intangible cultural heritage possessed by Turkey; transferring natural and cultural heritage to future generations ..

Turkish Music

Musical elements belonging to Turkish communities living in Central Asia and Anatolia, Turkish mythology (human, creation, religious rituals and festivals, etc.), mythological elements in the Turkish Folk Music repertoire, music types existing in Turkish States and Communities, development of Turkish Folk Music and Turkish Art Music within the historical process; mutual interaction of different traditions and styles related to music; examination with instruments, composers, performers, and sample works .

History of Turkish Art

Art styles from Hun Art to Göktürk, Uyghur, Karakhanid, Ghaznavid, Great Seljuk, Anatolian Seljuk, Beyliks, and Ottoman periods, comparative examination of architectural, sculpture, and painting examples belonging to these periods; contemporary Turkish artworks and artists starting from Republican Era Art .

AE

FIELD EDUCATION ELECTIVE COURSES

Computer-Assisted Mathematics Teaching

Importance of technology in mathematics teaching; use of software such as Computer Algebra Systems (CAS) and Dynamic Geometry Systems (DGS), creating and implementing interactive activities through these softwares; evaluating student products.

Culture and Mathematics

Relationship between mathematics and culture; defining mathematical concepts in their own cultural contexts, mathematical thought structures of different cultures, basic principles of research conducted in the field of ethnomathematics, relationship between mathematics-anthropology-linguistics; importance of including ethnomathematics studies in classroom practices; designing in-class mathematics activities for different cultural contexts.

Teaching Mathematics in Primary School

İAims, basic principles of primary school mathematics teaching; examination of primary school mathematics curriculum in terms of aim, content, philosophical approach, teaching methods, measurement and evaluation techniques; mathematical understanding, misconceptions, and difficulties in primary school students; measurement and evaluation in primary school mathematics lessons.

Mathematics Textbook Review

Physical, educational, visual design, and language expression characteristics and standards that should be in a textbook; suitability of textbook contents to the curriculum; examination of some existing textbooks in terms of content, language, suitability for student level, format, attractiveness, contribution to meaningful learning, ease of use in teaching, etc.

Inclusive Practices in Mathematics Education

Definition and basic principles of inclusion; characteristics of inclusion students; social relationships and instructional situations of inclusion students with other students, advantages and disadvantages of labeling; supporting inclusion students in mathematics lessons with individualized education programs, methods and techniques related to inclusion education; part-time and full-time inclusion practices and evaluation.

Self-Regulation in Mathematics Education

Self-regulation and self-regulated learning processes; aim and importance of self-regulated learning in mathematics education; characteristics of self-regulated learners in mathematics teaching and self-regulated learning strategies; classroom environments and instructional practices supporting self-regulated learning; metacognition; self-regulation in teachers; evaluation of metacognition and self-regulation skills..

Developing Activities in Mathematics Teaching

Aim and importance of using activities in mathematics teaching; characteristics of activities used in mathematics teaching; points to consider in preparing and implementing activities; evaluating sample activities; developing activities; measurement and evaluation in activity-based classrooms.

Material Design in Mathematics Teaching

Using field-specific instructional technologies; software types and purposes of use; design and development principles of materials to be used in teaching the field; determining material needs; designing two and three-dimensional instructional materials; developing instructional materials such as worksheets, transparencies, VCD, DVD, MP3, and MP4 files, etc.; evaluating in-class practices regarding different instructional materials.

Out-of-School Learning Environments in Mathematics Teaching

Scope and importance of out-of-school learning; mathematics teaching in out-of-school environments, teaching methods and techniques suitable for out-of-school learning environments (project-based learning, place-based education, etc.); out-of-school learning environments (museums, science centers, zoos, botanical gardens, industrial establishments, national parks, science festivals, science camps, natural environments, rural areas, etc.); planning, implementation, and evaluation of out-of-school learning activities.

Communication in Mathematics Classrooms

Realizing that mathematics is a language with its own unique symbols and terminology, using mathematical symbols and terms effectively and correctly, using mathematical language appropriately and effectively within mathematics itself, in different disciplines, and in life; expressing mathematical thoughts using different representation forms such as concrete models, figures, pictures, graphics, tables, symbols, etc.; expressing mathematical thoughts orally and in writing; relating daily language to mathematical language and symbols, and mathematical language to daily language and symbols; interpreting the truth and meaning of mathematical thoughts.

Teaching Mathematics to Gifted Students

Identification of gifted students in mathematics, advantages and disadvantages of labeling; characteristics of gifted students, development of giftedness in mathematics, program preferences for gifted students, differentiation, enrichment, acceleration for gifted students, supporting gifted students in the classroom, social relationships with gifted students; individualized education programs for gifted students.

Teaching Mathematics through Games

Games and game types; importance of games in mathematics teaching; theoretical approaches to games; logic, mathematics, intelligence games/puzzles; interaction of mathematics and games; examination of some games developed by mathematicians; cultural mathematics games, game theory; technology-supported mathematics games.

Assessment of In-Class Learning

Measurement tools used in education and their characteristics; tools based on traditional approaches: Written exams, short-answer exams, true-false tests, multiple-choice tests, matching tests, oral exams; tools aimed at recognizing the student in a multifaceted way: Observation, interview, performance assessment, student portfolio, research papers, research projects, peer assessment, self-assessment, attitude scales; points to consider in evaluating student success; evaluation of learning outcomes and grading.