PRIMARY EDUCATION MATHEMATICS TEACHING TRAINING

MASTER'S DEGREE PROGRAM

COURSE CONTENTS

İME 501 Graduate Seminar

It is the preparation of a scientific study on a subject chosen by the student studying for a master's degree or his/her advisor, by scanning the literature on the subject and presenting it to the public.

İME 502 Computer Aided Data Analysis

Data analysis theories, analysis of parametric and non-parametric data with the help of Excel and SPSS.

İME 503 Psychology of Learning

Basic Learning Theories: Dewey , Piaget , Bruner , Ausubel , Gagne , Novak , Kelly , Wittrock , Driver and Vigotsky , The Effects of Theories in Teaching Mathematics; Learning Theories-Curriculum Development Relationship, Concept Teaching, Concept Comprehension, Factors Affecting Understanding, Concept Understanding Levels, Concept Maps.

İME 504 Reform Movements in School Mathematics

An overview of school mathematics curricula in our country, the historical background of mathematics curriculum development studies in Turkey, an overview of mathematics curriculum development studies in the world, mutual analysis of mathematics curriculum development studies in Turkey and the world.

İME 505 Computer Aided Mathematics Teaching- I

Teaching mathematics subjects with computers, learning mathematics through computers, researching mathematics through specially designed software packages, designing and developing computer-aided activities on algebra, analysis and geometry using software such as Excel, Logo, Cabri and Derive .

İME 506 Computer Aided Mathematics Teaching- II

Designing and developing computer-aided activities using software such as Excel, Logo, Cabri and Derive for teaching mathematics subjects with computers.

Examination of İME 507 Subject Area Course Curriculum

Examining the textbooks and curricula approved by the Ministry of National Education in the subject field with a critical perspective. The content of the books, language, suitability for the student level, format, attractiveness, contribution to meaningful learning, ease of use in teaching, etc. examination from different angles.

İME 508 New Trends in Mathematics Education Research

Overview of Research Methods; A Critical View of Mathematics Education Research in Turkey ; Post-Modern Research Methods and Their Reflections on Mathematics Education Research.

İME 509 Test Development in Mathematics Education

Basic concepts: measurement, evaluation, evaluation approaches, basic qualities of tests: validity, reliability and usefulness, learning areas: cognitive, affective and psycho -motor areas . Bloom's taxonomy, cognitive domain measurements, writing test topics, examining written test topics and discussing their suitability for the field in which they are written, measurements

and question writing in affective and psychomotor areas, discussion of written questions, difficulty index calculation and its importance, topic analysis and test development.

İME 510 History of Mathematics

B.C. Development of arithmetic and operations starting from 50 000 BC. On topics such as geometry, fields, solids, analytical geometry, modern geometry, geometry tools, algebra, equations, Binomial theorem, logarithm, trigonometry, measurements, metric system, sets, integral, computers, numbers, structures, solving equations, vectors and graphics, Studies on mathematics and bibliographies of mathematicians who carried out these studies.

İME 511 Research Methods in Mathematics Education

Stages of a research, Literature review, Determination of the justification and purpose of the research, determination of the problem, data collection tools, different approaches to the analysis of qualitative and quantitative data.

İME 512 Geometry Teaching

The place and role of geometry in mathematics; Basic geometry concepts and topics in the primary school mathematics education program; Geometry teaching methods that emphasize active learning and the use of tools and equipment.

İME 513 Philosophy of Mathematics Education

What is mathematics? The nature of mathematics, the objectivity of mathematical knowledge, the effects of philosophical movements on the philosophy of mathematics; logicism, formalism, structuralism, the effects of the philosophy of mathematics on mathematics education, aims in mathematics education, ideologies, pragmatist mathematics education, humanist mathematics education, socialist mathematics education, contemporary trends, problems and research in

mathematics education, the National Education mathematics curriculum in terms of educational philosophy.

İME 514 Problem Solving in Mathematics

Introducing mathematical problems and problem solving theories; Discussion of educational methods for mathematical problem solving in schools; Different problem examples and solution methods; The place of problem solving in the learning and teaching process.

İME 515 Teaching Mathematics According to Constructivist Learning Approach-I

The subjects in the Primary School Mathematics curriculum are handled according to the constructivist approach, problem solving activities, visual tools and mental models developed for the problem to be solved, richness in terms of resources and diversity, students helping each other and working in groups.

İME 516 Teaching Mathematics According to Constructivist Learning Approach-II

The subjects in the Primary School Mathematics curriculum are addressed according to the constructivist approach, encouraging students to learn by discovery, methods and tools developed to measure students' performance, and the content of the curriculum to ensure coordinated learning with other disciplines.

İME 517 Differences in Thinking in Mathematics Teaching

Algebraic Thinking, Analytical Thinking, Transition Process from Algebraic Thinking to Analytical Thinking, Conceptual Learning, Procedural Learning, Relationships Between Conceptual and Procedural Knowledge, Comprehension and Misconceptions According to Balacheff , Different Mathematical Representations and Transitions Between Them.

İME 518 Meta Analysis in Mathematics Education

Difference between meta-analysis, literature review, meta-analysis and literature review, types of meta-analysis, databases and contextual criteria for analyzing studies—necessity of the study, data collection technique (researcher-developed, standard or combined), analysis of data, sample (number of students , level and selection), who did the teaching (same teacher, researcher or different teachers), implementation duration, findings, results and recommendations

İME 519 Quantitative Data Analysis in Educational Research

Research and Data Analysis, Hypothesis Testing, Simple and Partial Correlation, Parametric Statistics (t test, F test), Comparison of Mean Scores in Unrelated Measurements, Comparison of Mean Scores in Related Measurements, Comparison of Mean Scores in Mixed Measurements, Simple and Multiple Regression Analysis, Analysis of Covariance (ANCOVA) Multivariate Statistics, Factor Analysis, Non-Parametric Statistics (Chi-square, Mann Whitney U Test, Kruskal Wallis Test, Wilcoxon Signed Rank Test, etc.), Reliability Analysis

İME 520 Project Preparation in Mathematics Education

Definition and characteristics of research projects, basic points in a research project, project preparation process and its importance, TÜBİTAK projects (scientific and technical research projects, rapid support projects, science camps/schools support program, etc.), university scientific research projects, preparation of DPT projects and presentation to relevant institutions.

İME 521 Mathematical Fields and Field Change

Mathematical Field (Setting) According to Douady . Historical origins of the concept of field. Field Change. Transition between fields, its importance and applications. Representation

Family-Field relationship. Benefiting from different fields and transition between fields in mathematics teaching and examples of this.

İME 522 New Approaches in Material Development in Education

Introduction of context-based learning theory, its features, its relationship with other learning theories, its difference from constructivist theory, the react model and the design of materials suitable for this model, the application and evaluation of materials developed according to the react model.

İME 523 Use of Project-Based Learning in Mathematics Education

Definition of project-based learning, philosophical foundations, contributions of Dewey , Kilipatrick , Freinet , Bruner , connection with constructivism . How to do a project, the principles of project-based learning, its connection with the mathematics curriculum, its importance for our country and the delayed scientist profile. The general structure of project competitions and organizations in our country and in the world, TÜBİTAK, MEB, AIR CRAFT SCHOOL, UNESCO, FLL, etc. Characteristics of project competitions organized by organizations. How to guide students when doing projects in primary schools, what to pay attention to, databases where research can be done on the project, access to scientific information on the internet.

İME 524 Demonstrations in Mathematics Teaching

Representations and families of representations of a concept : algebraic, graphical, etc. Internal and external conversions between impressions. Convenient Visual Variables and Meaningful Algebraic Units. Multiple Displays. Representation Family-Multiple Representation Relationship. Teachers' use of different representations in mathematics teaching and related examples.

İME 525 Algebra Teaching in Primary Education I

Examining the primary school mathematics curriculum and determining the algebraic expressions in the program, determining the concepts behind these expressions (binary operation, group, ring, object), and examining these concepts. Difficulties encountered in teaching algebraic expressions and their solutions, activities used, examination and development of materials.

İME 526 Academic Writing Skills

Definition of scientific writing; types of scientific articles ; Preparation stages of a scientific article; science ethics; scientific article layout (title, abstract, subheadings, references, appendices, etc.); the process of publishing a scientific article; process of preparing papers for conferences and symposiums; domestic and foreign scientific article critiques; Examination of different scientific writing formats (rules) .

İME 527 Concept of Giftedness and Theories of Intelligence

Definition studies of the concept of giftedness in the historical process, an overview of popular intelligence theories and giftedness models (F. Gagne's giftedness model, Stenberg's giftedness model, H. Gardner's multiple intelligence theory, Renzulli's giftedness model), Giftedness and student characters in mathematics, Giftedness and student characters in science

İME 528 Reporting Scientific Research in Mathematics Education

A. Preparation Process (Determining the Topic of Study in Mathematics Education, Scanning and Evaluating Related Literature, Identifying the Problem and Forming the Hypothesis, Determining the Most Appropriate Method, Selecting the Data Collection Technique and Tool, Making a Plan on How to Collect and Analyze Data) . Implementation Process (Collecting and Analyzing Data According to Plan). Reporting Process (Writing the Research in Article Format)

İME 529 Algebra Teaching in Primary Education II

Examining the secondary school mathematics curriculum and determining the algebraic expressions in the program, determining the concepts behind these expressions (integers, rational numbers, real numbers, unknown, equation, polynomial), and examining these concepts. Difficulties encountered in teaching algebraic expressions and their solutions, activities used, examination and development of materials.

İME 530 Program Development and Evaluation in Mathematics Education

By scanning the literature on program development and evaluation studies in education, ensuring that the student has sufficient knowledge about this subject and developing and evaluating the program on a subject basis.

İME 531 Concept Teaching in Mathematics Education

Giving the definition of the concept, misconceptions, conceptual errors and conceptual confusion. Giving concept maps and Venn diagrams.

İME 599 Master's Thesis

It includes written thesis work and defense at the end of the thesis period.