

**Ministry of Education**

**Syllabus for the Course**

**Pre-School Mathematics**

**(Certificate programme for prospective pre-school teachers)**

**Ministry of Education**

**2017**

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**Course Syllabus**

Course Title: Teaching Maths for pre-school teacher

Course code: TMPSC-121

Credit hours: 2

Contact hour: 2

Requirements: Required for pre-school certificate Students

Prerequisite: None

**Course rationale:** The importance of this courseis the prospective pre-school teachers will get sustainable knowledge how to teach mathematics for pre-school children through playing, art, music and storytelling.

**Course Description:** In this course definition and importance of mathematics, teaching whole numbers up to 20, basic operations of whole numbers up to 20 and geometric figures, size, measurement, position and time will be treated.

**Course Objectives:**

At the end of this course, prospective pre-school teachers should be able to:

* Understand the meaning of mathematics.
* Know the importance of mathematics.
* Know how to teach whole numbers up to 20.
* Use teaching aids to teach addition and subtraction of whole up to 20.
* Improvise teaching aids in teaching geometric figures.
* Understand teaching methods to teach measurement.
* Apply different methods of teaching size and position.

Unit 1: Definition and importance of Mathematics

1.1 Definition of Mathematic

 1.2 Importance of Mathematic

Unit 2: Teaching whole numbers up to 20by using Art, Music and Play

* 1. Teaching whole numbers up to 10

2.1.1 Teaching whole numbers 1 to 9

2.1.2 Teaching the concept of zero

2.2 Teaching ordering whole numbers up to 10

2.3 Teaching whole number 11 up to 20.

2.4 Teaching ordering whole numbers 11 up to 20.

2.5 Sorting, comparing and ordering different amount of objects.

2.6 Addition and subtraction of whole numbers up to 20

Unit 3: Teaching Simple Geometric shapes and Positions by using Art, Music and Play

3.1 Teaching Simple geometric shapes

3.1.1 Teaching triangle

3.1.2Teaching rectangle

3.1.3 Teaching circles

3.2 Teaching Position

 3.2.1 The concepts of position

Unit 4 Teaching size of objects, measurement and units by using Art, Music and Play

4.1 Teaching size of object

* + 1. Length(short, long ,very short, very long )
		2. weight (heavy, easy)

4.1.3 Capacity (full, empty, etc.)

4.2 Teaching measurement and units

4.2.1 Money

4.2.2 Time

4.2.3 Length

4.2.4 Weight

4.2.5 Capacity

##### Suggested methods of instruction

* Modified lecture
* Inductive and deductive approach
* Assignment method
* Project Method
* Problem solving approach

##### Methods of Assessment

1. Peer teaching 15%
2. individual assignment 15%
3. individual assignment 15%
4. Quiz or tests            10%
5. Midterm Examination 20%
6. Final Examination 25%

**References**

1. Ministry of education preschool mathematics curriculum
2. Pre-school syllabus for diploma
3. Kotebe pre-school mathematics course content 2004E.C
4. Amhara teaching mathematics module for certificate 2000E.C

**Unit One: Definition and importance of Mathematics(2hrs.)**

**Unit outcomes:At the end of this unit the prospective pre-school teachers will be able to:**

* Know the methods how to teach the meaning of mathematics
* Understand the way how to teach the importance of mathematics
* Know how to associate the concept of mathematics in their daily life activities for pre-school children

**Instructional Resources:Chart, model shop,course module etc.**

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| Specific Objectives | Content | Teaching and learning activities | Instructional materials:  | Assessment techniques |
| -State the definition of mathematics in different view.  | 1.1. Definition of Mathematics**(1hrs.)** | -Explain the meaning of mathematics -assist the students to tell the meaning of mathematics by their own words  | -work sheet(figures, the definition of mathematics defined by different philosopher  | -ask the prospective pre-school teachers to define the meaning of mathematics  |
| -List the importance of mathematics for pre-school children-explain how to associate the pre-school children the concept of mathematics in their daily life | 1.2 Importance of Mathematics**(1hrs.)** | -start the lesson by asking oral question about the importance of mathematics -explain the importance of mathematics by relating with their daily life activities Eg. When they sell and buy goods | -chart-model shop | -ask prospective pre-school teachers**how** to tell the importance of mathematics for pre-school children. Ask the prospective pre-school teachers to give examples about the importance of mathematics in their daily life. |

**Unit Two: Teaching whole numbers up to 20by using Art, Music and Play (12hrs.)**

**Unit outcomes:At the end of this unit the prospective pre-school teacherswill be able to:**

* Know the way how to assist the children to identify the symbol of numerals 0 up to 9.
* Understand methods how children write whole numbers up to 20.
* Use different teaching aids to teach whole numbers up to 20.
* Know the methods how children order whole number up to 20.
* Applyhow children associate numbers with the set of objects.
* Understandthe way how children compare whole numbers up to 20.

**Instructional Resources:Chart, abacus, flash card, colour chalk, course module.**

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| Specific Objectives | Content | Teaching and learning activities | Instructional materials:  | Assessment techniques |
|  | 2.1 Teaching whole numbers up to 10 |  |  |  |
| -Identify the way how toteach whole numbers 1 to 9-express the way how to associate numbers 1 to 9 with their amount for pre-school children.-Identify the way how to teach children the shape of numbers 1 to 9 | 2.1.1 Teaching whole numbers 1 to 9**(2hrs.)** | -Showing pictures of balls,pebbles / flowers , cats ,dogs cows oxen etc./ by associating with numbers 1 to 9-use songs and help the students to sing together counting numbers 1 to 9.-assist the students to show the numbers 1 up to 9 by using flash card -showing how to write numbers 1 to 9 | * Set of objects with different number of elements.

-Pictures of set of objects with different number of elements. | -Asking prospective pre-school teachers how to identify the shape of numbers 1 to 9.-Asking the prospective pre-school teachershow children write numerals 1 up to 9  |
| - Identify the way how to explainthe concept of zero-explain the way how children write the numeral ‘0’ | 2.1.2 Teaching the concept of zero**(2hrs.)** | -describe the concept of zero(0) by using examplesExample: If you have one pencil in your hand and if you give this pencil to your friend, what’s left -assist the students to write the numeral ‘0’.  | -picture-empty box-curved wire | -ask the prospective pre-school teachersto teach the concept of “0” and how to write the number “0” |
| * Identifying the way how children write numbers in order up to 10 through art, music and play.
* use song for counting 1 to 10 with actions (e.g. jumping, hopping).
* Produce teaching aids
 | 2.2Teaching ordering whole numbers up to 10**(2hrs.)** | * Showing pictures of balls / flowers , cats ,dogs cows oxen etc./by associating with numbers in order 1 to 10

-use songs and help the students to sing together counting numbers in order 1 to 10. | * set of objects with different number of elements.

-Pictures of set of objects with different number of elements | -ask the prospective pre-school teachersto produce teaching aids-ask the prospective pre-school teachers to show how to teach the order of numbers up to 10 |
| -Identify the ways of teaching numbers 10 to 20 by using objects through Art and play.-Produce materials for teaching numbers 10 to 20 using locally available materials. | 2.3 Teaching whole number 10 up to 20.**(2hrs.)** | * Showing pictures of balls,pebbles / flowers , cats ,dogs cows oxen etc./

-Preparing songs and help the students to sing together counting numbers up to 20- Assist the students to sing about numerals and numbers by clap their hands in group. | * Set of objects with different number of elements.

-Pictures of set of objects with different number of elements | Ask prospective pre-school teachers how to introduce numbers or numerals through art and play.  |
| * Identifying the way how children write numbers in order 11 to 20 through art, music and play.
* Use song for counting 11 to 20 with actions (e.g. jumping, hopping).
 | 2.4 Teaching ordering whole numbers 11 up to 20.**(2hrs.)** | * Showing pictures of balls / flowers , cats ,dogs cows oxen etc./ by associating with numbers with order 11 to 20
* Preparing songs and help the students to sing together counting numbers in order 11 to 20.
 | * Set of objects with different number of elements.

Pictures of set of objects with different number of elements | -ask the prospective pre-school teachers to produce teaching aids-Ask the prospective pre-school teachersto show how to teach the order of numbers 11 to 20 |
| * Identify the way how to sorting, comparing and ordering different amount of objects for pre-school children.
* Produce teaching aids
 | 2.5 Sorting, comparing and ordering different amount of objects.  | * Showing pictures of balls / flowers, cats, dogs cows oxen etc. / by different amount in different flash cards.
 | * Pictures
* Flash cards
* Real objects
 | -Ask the prospective pre-school teachers to produce teaching aids.-Asking the prospective pre-school teachers to sorting , comparing and ordering different amount of objects  |
| * Using songs and play to add or subtract numbers.
* Explain the way how to add and subtraction numbers up 20 using manipulative, charts, abacus, etc
 | 2.6 Addition and subtraction of whole numbers up to 20 **(2hrs.)** | * Help the students to add set of objects contains 1-20 elements using charts (pebbles, Balls, flowers etc.)
* Help the students to subtract set of objects contains 1-20 elements using charts (Balls, flowers, cats etc.)
* Use songs and let the students to sing in group about addition and subtraction of whole numbers 1-20.
 | * Set of objects (balls, flower etc.)

charts  | * Ask prospective pre-school teachers to display objects for adding or subtracting numbers.
* Ask the prospective pre-school teachers how to use different methods for adding and subtracting numbers.
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**Unit 3: Teaching Simple Geometric shapes and Positions by using Art, Music and Play (6 hrs.)**

**Unit outcomes:At the end of this unit the prospective pre-school teachers will be able to:**

* Know the methods of teaching about the concepts of Circle, Rectangle and Triangle
* Produce teaching aids to teach simple geometric shapes and positions.
* Arrange objects in different orders to teach position
* Organize pictures of different animals or objects to teach location of an object or animal.
* Understand the way how to assist the children to identify the shape of simple geometric figures.

**Instructional Resources: pictures, real objects, models, colour chalk, course module etc.**

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| Specific Objectives | Content | Teaching and learning activities | Instructional materials:  | Assessment techniques |
|  | 3.1 Teaching Simple geometric shapes |  |  |  |
| -Identify the way how to teach triangle for pre-school children.-produce model of triangle-Show the wayhow to identify the shape of a Triangle from the given different shapes | 3.1.1 Triangle **(1hrs.)** | -Explain the concept of triangle for the students by demonstrating triangular shaped objects.-Explain about triangular shape for the students by cutting hard paper in triangular shape)* Use songs and select types of play to teach triangle and help the students to play it.
 | -pictures-real objects-models | -Ask prospective pre-school teachers to prepare triangle model that is appropriate for preschool children- give them an exercise how to teach triangle for pre-school children -ask the prospective pre-school teachers to prepare songs and play to teach triangles. |
| -Identify the way how to teach rectangle for pre-school children.-produce model of rectangle-Identify the shape of a rectangles from the given different shapes. | 3.1.2 Rectangle **(2hrs.)** | -Explain the concept of rectangle for the students by demonstrating rectangular shaped objects.-showrectangular shape for the students by cutting , foldinghard paper etc., * Use songs and select types of play to teach rectangle and help the students to play it.
 | -pictures-real objects-models- hard paper-Scissors-ruler | -Ask prospective pre-school teachers to prepare rectangle model that is appropriate for preschool children- give them an exercise how to teach rectangle for pre-school children -ask the prospective pre-school teachers to use songs and play to teach rectangles. |
| -Identify the way how to teach circles for pre-school children.-produce model of circles- Identify the shape of a circles from the given different shapes. | 3.1.3 Circles**(1hrs.)** | -Explain the concept of circle for the students by demonstrating circular shaped objects.- showcircular shape for the students by cutting , folding hard paper etc., * Use songs and select types of play to teach circle and help the students to play it.
 | -pictures-real objects-models- hard paper-Scissors-ruler | -Ask prospective pre-school teachersto prepare circle model that is appropriate for preschool children- give them an exercise how to teach circle for pre-school children -ask the prospective pre-school teachers to prepare songs and play to teach rectangles. |
|  | 3.2 Teaching Position |  |  |  |
| --Identify the way how to introduce the position of objects. -Identify the way how to teach position by shifting objects their places | 3.2.1 The concepts of position**(2hrs.)** | -Explaining the concept of position(direction) by using reference objects.( show some samples using the terms before, after, middle, last, first, bottom ,under ,near, far )* Arranging objects in different ways and let the students show their position using words like before, after, middle, last etc.
 | * different objects

-pictures | * Ask prospective pre-school teachers to apply position words
* Ask prospective pre-school teachers to indicate the position of the object creating their own songs.
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**Unit 4: Teaching size of objects, measurement and units (12hrs.)**

**Unit outcomes:At the end of this unit the prospective pre-school teacherswill be able to:**

* Prepare different songs to teach length, weight and capacity for pre-school children.
* Understand how the pre-school children compare size of length, weight and capacity.
* Know the methods of teaching how to teach preschool children about the concept of length, weight, capacity and time.
* Produce different teaching materials length, mass, capacity and time.

**Instructional Resources:pictures, real objects, models, colour chalk, course module etc.**

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| Specific Objectives | Content | Teaching and learning activities | Instructional materials:  | Assessment techniques |
|  | 4.1 Teaching size of object  |  |  |  |
| -Identify ways of teaching length.-compare the length of different objects. | 4.1.1 Length(short, long ,very short, very long)**(2hrs)** | * Use pictures and objects to show (short, long, shorter, shortest, longer, longest) using locally available materials. (E.g. animals, sticksetc.)
 | -pictures-animals-stick, etc. | * Ask the prospective pre-school teachershow to assist pre-school children to identify the length of objects
 |
| * Identify ways of teaching weight using music and play.
 | 4.1.2. weight (heavy, light)  **(2hrs)** | * use real objects to show heavy and light objects
* Use song and help students to tell the weight of the given object.
 | -real objects with different weight | -give exercise to teach in peer on weight by using music and play. |
| * Identify ways of teaching capacity using music and play.
 | 4.1.3. Capacity (full, empty, etc.)  **(2hrs)**     | * Use water filled and empty bottle.
* help students to tell the capacity of the given material in terms of the other materials.(eg. 1 bottle contains 3 tea cups of water)
 | -bottle-water-tea cup etc. | -ask the prospective pre-school teachers to practice the way of teaching capacity. |
|  |  4.2.Teaching measurement and units |  |  |  |
| -Identify the way how to teach about money for pre-school children-Explain the way how to teach units of money for preschool children | 4.2.1. money**(1hrs)** | * Explain the concept of money for the students by using pictures and real objects of cents and Birr.
* Use songs that expresses units of money (cents and birr.)
* Practice how to use money in their daily life activities
 | -pictures-real object | -ask prospective pre-school teachersto explain different ways of teaching units of money for preschool children |
| -Explain methods of teaching for preschool children about time-Explain the way how to teach units of time for preschool children | 4.2.2 Time (hour, day, week, etc.**(2hrs)** | -start the lesson by explaining the concept clock by using of clock model.-explain the concept of hour, day week, etc. for the students-use music /songs/ that expresses the relationship between hour,day and week and assist the students to sing it. | -pictures | - ask prospective pre-school teachers to explain different ways of teaching units of time for preschool children -ask prospective pre-school teachers to explain different ways of teachingpreschool children about time |
| -Identify different ways of teaching preschool children about length-Explain the way how to teach units of length for preschool children | 4.2.3. Length **(1hrs)** | -explain the measurement of length for the students by using different locally available objects (Ruler, stick, foot etc.) -explain the basic units of length (e.g. mm, cm, and m .km) | * picture
* objects

 clock | -ask prospective pre-school teachers to list different ways of teaching measurement of length and its unit for preschool children  |
| -Identify different ways of teaching methods for preschool children about weight -Explain the way how to teach units of weight for preschool children | 4.2.4 Weight **(1hrs)** | -explain the measurement of weight by using different locally available objects.- explain the basic units of weight ( e.g. gram, kilogram, tone )- use music /songs/ that expresses the measurement of weight and assist the students to sing it. | -Beam balance  | -ask prospective pre-school teachers to list different ways of teaching measurement of weight and its unit for preschool children  |
| -List different ways of teaching methods about measurement of capacity and its units for preschool children. | 4.2.5 Capacity /using cups,bottles, glasses etc.**(1hrs)** | -explain the measurement of capacity by using cups , bottles, glasses, pot etc-help the students to list capacity of different objects.-- explain the basic units of capacity e.g litter and mil litter ,  | -plastic bottle.-bottle-cups | ask prospective pre-school teachersto list different ways of teaching measurement of capacity and itsunit for preschool children  |