

## **B.Ed OPTIONAL COURSE**

### **MATHEMATICS - I**

#### **OBJECTIVES**

At the end of the course, the student teachers will be able to

- understand the nature and development of mathematics
- understand the aims and objectives of teaching mathematics
- know the importance of teaching mathematics in relation to other subjects
- formulate the general instructional objectives and specific learning outcomes
- acquire competence in teaching mathematics and structuring lesson plans
- apply methods of teaching of mathematics
- understand the various psychological aspects involved in teaching mathematics

#### **UNIT I. Nature, Characteristics and of Mathematics**

Meaning, characteristics and definition of Mathematics - Logical Sequence, structure, precision, abstractness, symbolism - Mathematics as a science of measurement and quantification - Mathematics and its relationship with other disciplines

#### **UNIT II. Developments of Mathematics**

Contribution of eminent mathematicians to the development of mathematics - Aryabhata, Brahmagupta, Baskara, Ramanujam, Euler, Euclid, Pythagoras, Gauss.

#### **UNIT III. Aims And Objectives of Teaching Mathematics**

The need and significance of teaching Mathematics - Aims - Practical, social, disciplinary and cultural – Instructional Objectives – General Instructional Objectives (G.I.Os) and behavioural or Specific Learning Outcomes (S.L.Os) relating to the cognitive, affective and psychomotor domains.

#### **UNIT IV. Teaching Skills**

Micro teaching – origin, need, procedure, cycle of operation and uses – skill emphasis - explaining, questioning, using black board, reinforcement, stimulus variation, introduction

## **UNIT V. Lesson planning and its uses**

Macro teaching – Lesson plan and unit plan – Herbartian steps - Format of a typical lesson plan - teaching aids – motivation, presentation, application, recapitulation and assignment

## **UNIT VI. Psychological Theories and factors influencing the Learning of Mathematics**

Psychology of learning Mathematics - Gagne's types of learning, the ideas of Piaget and Bruner – appropriateness of these types in learning mathematics.

Psychological aspects – interest , attention – Formation of mathematical concepts. - Factors influencing the learning of Mathematics - motivation, maturation, perception, special abilities, attitude and aptitude-Divergent thinking in Mathematics – creative thinking in Mathematics.

## **UNIT VII. Identification of Individual differences**

Individual differences in mathematics - Causes for slow learning in mathematics and remedial measures for the backward - Identification of the gifted and enrichment programmes for the gifted.

## **UNIT VIII. Methods and Teaching Aids**

Inductive, deductive, analytic, synthetic, heuristic, project, problem solving and laboratory methods of teaching mathematics – Activity Based Learning (ABL) – Active Learning Method (ALM) – Applications of ABL and ALM.

Importance of teaching aids – projected and non-projected aids – improvised aids : Paper folding and paper cutting etc., - criteria for selection of appropriate teaching aids – use of mass media in teaching mathematics

## **UNIT IX. Evaluation and Analysis of test scores**

Different types of tests in Mathematics, achievement, diagnostic, prognostic -criterion and norm referenced evaluation - construction of achievement test - Statistical measures -mean, median, mode, range, average deviation, quartile deviation, standard deviation -rank correlation.

## UNIT X. Analysis of Textbooks

Analysis of content available in Mathematics text books of IX to XII standards prescribed by Government of Tamil Nadu.

### PRACTICALS

- Collection of Biographies of different mathematicians and history of symbols.
- Project on mathematics and its relationship with other disciplines
- Preparation of unit plan and lesson plan
- Practice of skills in micro teaching
- Preparation of Improvised teaching aids
- Preparation of over head transparencies
- Test construction – Achievement and Diagnosis
- Critical analysis of content course of standard IX to XII syllabus.

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விஜயலட்சுமி. (2008). *கற்பித்தலில் சிக்கல்கள்-தீர்வுகள்*. சென்னை: சாந்தா பதிப்பகம்.

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பாஸ்கரன், ப., & பத்மப்ரியா. (2007). *கலைத்திட்ட வளர்ச்சி*. சென்னை: சாரதா பதிப்பகம்

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