B-201-A: PEDAGOGY OF MATHEMATICS

Objectives
The pupil teacher will be able:

1. To understand the language and symbolism of mathematics as a discipline.
2. To develop the pedagogic understanding of Mathematics in context of school and learner.
3. To understand and apply different methods of teaching mathematics in the classroom.
4. To promote understanding of Mathematics in learners.
5. To select and organize content, plan instruction and ensure effective delivery.
6. To organize pedagogic study of subjects in Mathematics at school level.
7. To facilitate philosophical & epistemological insights of Mathematics teaching in pupil teacher.
8. To enrich knowledge and teaching competency.

Course Content

UNIT I
- Contribution of Mathematicians:
  Indian: Aryabhata, Brahmagupta, Bhaskara-I, Bhaskara-II (Bhaskaracharya), Ramanujun.
  Other than India: Pythagoras, Euclid, Gauss, Leonhard Euler, Alan Turing.
- Need and significance of teaching Mathematics, Aims and objectives of teaching Mathematics
- Concept formation (Theories and implications), Writing of objectives in Behavioral terms, Factors influencing learning of Mathematics

UNIT II
- Place of Mathematics in school curriculum.
- Selection, sequencing and organization of curriculum content.
- Correlation of Mathematics with other school subjects
- Critical appraisal of Mathematics curriculum and textbook at the Upper Primary, Secondary and senior secondary Level
UNIT III

- Methods of teaching Mathematics: Inductive, Deductive, Analytical, Synthetic, Heuristic, Project, Laboratory, Lecture and Question-answer.
- Techniques of teaching Mathematics: oral, written, drill, assignment, self study, supervised study, programmed learning, group work and review.
- Audio-visual aids, software and hardware and ICT for teaching Mathematics
- Unit plan and lesson planning in Mathematics, Teaching points of various content areas in Mathematics like Arithmetic, Algebra, Geometry and Trigonometry etc.

UNIT IV

- Evaluation in Mathematics: purpose and procedure.
- Teaching mathematics to Gifted and backward children, their identification and provision for mathematics education; remedial teaching: its meaning, principles of diagnosis and remediation.
- School activities (inside and outside) for popularization of Mathematics.
- Qualities and competencies of an effective Mathematics Teacher.

Practicum

- Practical exercises on Programmed instruction & CAI.
- Construction & standardization of Achievement test.
- Analysis and evaluation of syllabus for stage of education in secondary school.
- Construction of a diagnostic Test.
- Preparation of list of equipments essential for teaching mathematics in school.
- Preparation of teaching aids.
- Essentials of mathematics Library and Mathematics laboratory
- Preparation of Lesson Plan.

Books Recommended:
1. Chadha, B.N. : Teaching of Mathematics
2. Dharamabir and Agrawal: The Teaching of Mathematics in India.
3. Rawat, M.S. and Agrawal : M.B.L. : Ganit Shikshan
15. The Principle of Objective Testing in Mathematics, Fraser Cillam, 1971
17. Teaching of Mathematics in the New Education by N.K. Kuppuswami Aiyangar