B-201-C: PEDAGOGY OF BIOLOGICAL SCIENCE

Objectives
The pupil teacher will be able:

• To acquire an understanding of and to contribute towards curriculum development as a reflective practitioner.
• To apply learning experiences and educational aids to teaching biology in the classroom.
• To enable to understand the forward linkages through an exposure to possible course/vocations options after school.
• To develop competencies, skills and abilities needed to transact, critically analyze and evaluate the biology curriculum.
• To develop teaching skills for conducting theory and practical lessons.
• To develop conceptual understanding related to the pedagogy of biological sciences.
• To develop scientific attitude among the learner.
• To understand the nature of biology its aims, values & objectives of teaching biological sciences.
• To understand the different strategies of teaching biological sciences.

UNIT: I

DEVELOPMENT OF BIOLOGICAL SCIENCE AND PURPOSE OF ITS TEACHING
- Nature & Concept of Biology
- Correlation of Biology With other subjects (Interdisciplinary Approach)
- Development of Biology in Indian Context & International context.
- Understanding contemporary issues in relation to biology (e.g. environment, gender etc.) in a developmental context.
  - Values and Aims of teaching biological science
- Taxonomy of Educational Objectives of biological science

UNIT –II

CURRICULUM DEVELOPMENT
- Definition of curriculum
- Principles of curriculum organization
- Critical analysis of current biological curriculum at secondary and senior secondary level.
- Qualities of a good science text book

**UNIT- III**

**METHODS AND STRATEGIES OF BIOLOGICAL SCIENCE TEACHING**

- Programme instruction
- Micro teaching
  - Team teaching
  - Simulated teaching
  - Development of Year plan, Unit plan, Lesson plan (*design, approaches & writing the plan*)
- ICT based instruction
- Methods of teaching biological science.
- New trends in teaching of biology at national and international levels, learning to teach a selected portion of course with innovative techniques.
- Concept of teaching aids, Principles of using T.A.
- Edger Dale’s cone of experience
- Selection & sources of learning experience
- Classification of teaching aids
- Integrating multi-media systems (ICT) for science education

**UNIT- IV**

**EVALUATION & ASSESSMENT**

- Concept, Types & Importance of Evaluation, CCE.
- Preparation of blue print
- Tools of Evaluation for Biology
- Construction of an effective Question Bank
- Action Research
- Remedial Teaching

**UNIT – V**

**STRENGTHENING BIOLOGY TEACHING & THE SCIENCE TEACHER**

- Science clubs, Eco clubs, Science museums, Science fairs, Field trips, Science exhibitions,
  - Science library
- Celebration of important days & events related to science and their relevance
- e-learning in the science classroom
- Talent Search Competitions in Science
- Biology laboratory & Improvised apparatus
- Qualities of a Effective biology Teacher
- Professional Growth of a biology Teacher
- Moral and ethics in biology Teacher
- Sensitivity in biology Teacher
- Development of Soft Skills
- Professional competencies and abilities of a senior biology teacher - including organizing seminars, workshops, providing resource support.

**PRACTICUM**

- Comparative and analytical study.
- Material development
- Framing content as per
- Programme instruction
- Development of lesson plan based on using 6e’s (Engage, Explore, Explain, Elaborate, Evaluate, Extend) with the help of ICT
- Drafting /designing instructional objectives & instructional programme
- Content analysis & framing curriculum (on different topic)
- Development of instructional material related to methods school teaching
- Teaching aid formation
- Collection of various audio and video clippings with reference to content
- Assignment
- Group discussion
- Blue print formation.
- Construction of improvised apparatus
- Organising activities under science, eco clubs
- Organising science fair and exhibition at school level
- Preparation and analysis of achievement tests for periodic assessment.
- Continuous assessment - developing learner profiles and portfolios.
- Action Research.

**Suggested Readings**
• Siddiqi & Siddiqi: Teaching of Science Today and Tomorrow, Doaba House, New Delhi, 2002.
• Jerry Wellington. Teaching Science in Secondary Classes; Routledge, USA, 1996.
• एम ० के० गोयल :पर्यावरण शिक्षा,विनोद पुस्तक मंदिर , आगरा-२