

PAPER-V/VI (EDN: 05/06)

Methods of Teaching Biological Sciences
[100 Instructional Hours – 100 Marks]

Objectives:

This course will enable the student teachers to:

1. explain the concept of science
2. appreciate the contributions of scientific institutions
3. explain the aims & objectives of teaching biological sciences
4. describe the competencies of biological science teacher
5. recognize the recommendations of commissions & policies on science teaching
6. develop the skill of writing unit & lesson planning
7. differentiate the relative advantages of methods of teaching biological sciences
8. develop the various skills of microteaching technique
9. explain the use of various teaching learning material
10. understand the concept of biological sciences curriculum
11. describe the planning of science laboratories
12. develop the skill of constructing test items
13. recognize the relative advantages of resources for teaching biological sciences

Course Content:

Unit I: Introduction to Science

8 Hours

- 1.1: Meaning and Scope of Science
- 1.2: Structure of Science
- 1.3: Characteristics & Functions of Science
- 1.4: Contributions of Scientific Institutions – Centre for Cellular & Molecular Biology (CCMB); National Institute of Nutrition (NIN); International Crops Research Institute for Semi-Arid Tropics (ICRISAT); National AIDS Control Organization (NACO)

Unit II: Aims & Values of Teaching Biological Sciences

8 Hours

- 2.1: Aims of Teaching Biological Sciences
- 2.2: Values of Teaching Biological Sciences
- 2.3: Correlation of Biological Sciences with other School Subjects
- 2.4: Competencies of Biological Sciences Teacher

Unit III: Objectives of Teaching Biological Sciences

12 Hours

- 3.1: Meaning and Importance of Objectives
- 3.2: Bloom's Taxonomy of Educational Objectives
- 3.3: Instructional Objectives & Specifications
- 3.4: Recommendations of Commissions & Policies on Aims & Objectives of Science Teaching

Unit IV: Methods of Teaching Biological Sciences

15 Hours

- 4.1: Lecture Method; Lecture-cum-Demonstration Method
- 4.2: Scientific Method (Inductive & Deductive)

- 4.3: Project Method
- 4.4: Laboratory Method
- 4.5: Microteaching Technique

Unit V: Planning for Teaching Biological Sciences **11 Hours**

- 5.1: Year Plan
- 5.2: Unit Plan
- 5.3: Lesson Plan: Herbartian & Constructivist Approaches
- 5.4: Learning Experiences

Unit VI: Biological Sciences Curriculum **8 Hours**

- 6.1: Principles of Curriculum Construction
- 6.2: Organization of Curriculum Construction: Logical, Psychological, Topical, Concentric, and Spiral.
- 6.3: Qualities of a Good Science Textbook
- 6.4: Critical Analysis of a Secondary School Biological Sciences Textbook

Unit VII: Biological Sciences Laboratories **10 Hours**

- 7.1: Importance of Practical Work in Biological Sciences
- 7.2: Planning of Science Laboratories – Lecture Room-cum- Laboratory; All Purpose Laboratory; Mobile Science Laboratory
- 7.3: Procurement, Care & Maintenance of Laboratory Equipment and Maintenance of Laboratory Registers
- 7.4: First-Aid & Safety Measures

Unit VIII: Teaching Learning Material **10 Hours**

- 8.1: Edgar Dale's Cone of Experience
- 8.2: Over Head Projector (OHP); LCD Projector; TV; Computer
- 8.3: Charts; Models; Specimens; Activity Aids (Herbarium, Vivarium, Terrarium); Display Boards
- 8.4: Improvisation of Teaching Aids

Unit IX: Resources for Teaching Biological Sciences **6 Hours**

- 9.1: Science Club
- 9.2: Science Fair & Science Exhibition
- 9.3: Science Museum
- 9.4: Science Library

Unit X: Evaluation in Biological Sciences **12 Hours**

- 10.1 Concept of Test, Examination, Measurement, Assessment and Evaluation
- 10.2 Evaluation – Meaning, Process, Types and Tools
- 10.3 Qualities of a Good Test and Types of Tests
- 10.4 Preparation of Scholastic Achievement Test (SAT) with Weightage Tables and Blue Print
- 10.5 Analysis and Interpretation of Test Scores

References:

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