

## **SEMESTER – I**

### **CPS 2a - Part I - PEDAGOGY OF BIOLOGICAL SCIENCE**

**Credits: 4**

**Internal: 40 marks**

**Hours/Week: Theory-4hrs & Practical- 4hrs**

**External: 60 marks**

**Total: 100 marks**

#### **Course Learning Outcomes:**

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

- explain the nature and scope of Biological Science;
- integrate aims and objectives of teaching Biological Science;
- integrate the teaching skills effectively in the classroom;
- explore the avenues of teaching and learning Biology;
- identify the individual differences of learners and deliver instruction by employing the appropriate methods of teaching Biological Science;
- organize teaching aids to support learning;
- observe the classes of subject experts and reflect on the demonstration of concepts in Biological Science; and
- prepare mini teaching lessons and Educational Technology record.

#### **Unit I: Nature and Scope of Biological Science**

Introduction- Development of Science Education after Independence, National Policy on Education and relationship of Biology with other branches of Science

#### **Unit II: Aims and Objectives of Teaching Biological Science**

Goals and Objectives of teaching Biological Science with reference to Revised Bloom's Taxonomy of Educational Objectives - General and Specific Objectives of teaching Biological Science – Writing

Objectives in behavioral terms- Aims of teaching Biological Science at different levels: Primary, Secondary and Higher Secondary.

### **Unit III: Development of Skills through Mini Teaching**

Mini teaching: Meaning, Characteristics, Phases of Mini teaching, Teaching Skills : Skill of set induction, Skill of Explaining, Skill of Blackboard Writing, Skill of Illustrating with examples, Skill of Probing Questions, Skill of fluency in questioning, Skill of Stimulus Variation, Skill of Reinforcement, Skill of achieving Closure, Advantages and Limitations of Mini Teaching

### **Unit IV: Exploring Learner in Teaching and Learning Biological Science**

Introduction – Class as a heterogeneous group-the need to cater to the individual differences. Gifted learners – Need and identification of gifted children, characteristics of gifted children, enrichment programme for gifted children, National Talent Search Examination, steps to enhance the abilities of the gifted children in science. Slow learners- Need and problem faced by the slow learners, special care to cater to the slow learners, Diagnostic tests, Remedial teaching to help the slow learners.

### **Unit V: Methods of Teaching Biological Science**

Introduction: i) Teacher Centered Method ii) Pupil Centered Method

**Teacher Centered Method** - Lecture Method; Lecture Demonstration Method, Discussion Method, Supervised Study Method, Augmented and Virtual Reality.

**Pupil Centered Method** – Problem-Solving Method, Project Method, Inductive and Deductive Method, Heuristic Method, Discovery Method, Story Telling Method.

### **Unit VI: Teaching Aids**

Introduction: Meaning & Advantages – Edgar Dale's Cone of Learning Experience – Projective and Non Projective Aids – current trends in educational technology – Different types of Boards, SMART Interactive Whiteboard, films, filmstrips, OHP, Motion Pictures, Charts Documentaries, Graphs, Internet usage - E-Content Development and Digital tools for Online Teaching and Learning- LMS:Google Classroom,Digital tool: Kahoot.

**Suggested References:**

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Bhandala, Chadha., & Khanna. (1985). *Teaching of Science*. New Delhi: Prakash Brothers Educational Publishers.

Bhatnagar, A.D. (2004). *Teaching of Science*. Meerut: Surya Publications.

Frost Jenny., & Turner Tony. (2005). *Learning to teach Science in Secondary school*.

New York: Routledge Palmer Publication.

Natrajan, C. (1997). *Activity based foundation course on science technology and society*. Mumbai: Homi Bhaba Centre for Science Education.

Korde, & Sawant.(1980). *Science and Scientific Method*. New Delhi: Himalaya Publishing House.

Passi, B.K. (1976). *Becoming a Better Teacher: Micro teaching approach*. Ahemedabad: Sahitya Mudranalaya.

Prasad Janardhan. (1999). *Practical aspects in Teaching of Science*. New Delhi: Kanishka Publication.

Sharma, Jagdish. (2006). *Models of Teaching Science*. Jaipur: Raj Publishing House.

Veena Rani Pandey. (2004). *Major Issues in Science Teaching*. Summit Enterprises.

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