

SEMESTER – I

CPS 2a - Part I - PEDAGOGY OF BIOLOGICAL SCIENCE

Credits: 4

Internal: 40 marks

Hours/Week: Theory-4hrs

External: 60 marks

Practical- 4hrs

Total: 100 marks

Objectives

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 of Biological Science;
- get acquainted with the teaching skills
- explore teaching and learning Biology
- recognize the new trends in curriculum transaction;
- organize the teaching aids to support learning;

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, Mini teaching cycle, 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. 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, film, filmstrips, OHP, Motion pictures, Documentaries, graphs, internet usage.

Suggested references:

- ❖ Aggarwal .D.D. (2008). *Modern Method of Teaching Biology*. New Delhi: Karanpaper backs.
- ❖ Arulselvi,E. (2007). *Teaching of Science*. Chennai: Saradha Publication.
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- ❖ Bhatnagar,A.D. (2004). *Teaching of Science*. Meerut: Surya Publications.
- ❖ Buffaloe, Neal., & Throneberry, J. B. (1972). *Principles of Biology teaching*. New Delhi: Prentice – Hall of India Limited.
- ❖ Frost Jenny., & Turner Tony. (2005). *Learning to teach Science in Secondary school*.
New York: Routledge Palmer Publication.
- ❖ Garrett. (1979). *Statistics in Psychology and Education*. Bombay: Vakils, Feffer and Simons Ltd.
- ❖ Green, T. L. (1965). *The teaching of biology in tropical secondary schools*. London: Oxford University Press.
- ❖ Harms, N., & Yager, R. (1981). *What research says to the science teacher* (Vol. 3).
Washington: National Science Teachers Association.
- ❖ Heiss. E. D., Obown, S., & Hoftman, C. W. (1961). *Modern science teaching*. New Delhi: Macmillian Company Press.
- ❖ Khana, S.D,et al. (1976). *Technology of science teaching*. New Delhi: Doaba House.
- ❖ 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.

- ❖ Saunders, H. N. (1967). *The teaching of general science in tropical secondary school*. London: Oxford University Press.
- ❖ Sharma, Jagdish. (2006). *Models of Teaching Science*. Jaipur: Raj Publishing House.
- ❖ Veena Rani Pandey. (2004). *Major Issues in Science Teaching*. Summit Enterprises.
