

9

NORTH MAHARASHTRA UNIVERSITY, JALGAON.  
B.Ed. (General and Physical) from June, 92  
Course IV/V (General)      Course -V (B.Ed. Physical)  
SYLLABUS

*Cancelled*

SCIENCE CONTENT CUM METHODOLOGY

Aim and objectives of teaching Science.

- 1) To help the pupil teacher to develop the efficiency in teaching Science.
- 2) To make the student teacher familiar with the objectives of teaching Science.
- 3) To enable the student teacher to use various and appropriate methods and techniques of teaching Science effectively.
- 4) To develop in him adequate skills in the preparation and use of suitable teaching aids.
- 5) To enable him to organise Co-curricular activities in Science.
- 6) To enable him to prepare and use appropriate tools of evaluation.
- 7) To enable him to correlate Science with other School subjects.
- 8) To help the student teacher to understand the facts, terms, concepts, Ideas, Laws, Principles in Science.
- 9) To help the student teacher to develop the skills related to Science.
- 10) To help him to develop Scientific attitude.
- 11) To help him to develop the capacity and ability to apply the Scientific attitude in every day life.

Area A :- Nature and Importance of subject

Unit 1 :- Nature of subject & its importance.

- 1.1 a) Science as structured knowledge  
b) Science as inquiry process.  
c) Science as a way of learning  
b) Science as a process and product.
- 1.2 Importance of the subject.
  - a) Scope of Science in School curriculum
  - b) Values of teaching Science.
  - c) Correlation (Indifferent branches of Science and with other School subjects)
- 1.3 a) Place of Science in School curriculum  
b) Nature of Science Syllabus (concentric topic wise)  
c) Critical study of present Syllabus.  
d) Critical study of text book in light of Syllabus.

Unit 2 :- Objective of teaching Science

- 2.1 Objectives of teaching Science (General)
- 2.2 Instructional objectives with specifications  
(as per Bloom's taxonomy)

Area B Methods and techniques of teaching Science

Unit 3.1 Methods of teaching Science.

- a) Laboratory.
- b) Demonstration.
- c) Project.
- d) Heuristic.
- e) Historical
- f) Field trip.

3.2 Techniques of teaching Science.

- a) Question - answer
- b) Problem solving.
- c) Discussion.
- d) Observation
- e) Collection.
- f) Dissection
- g) Programmed learning
- h) Advanced organiser model
- i) Concept attainment model
- j) Inquiry training model

Note :- These methods and models are to be studied from the following points of view meaning, Principles and characteristics, limitation and educational importance with reference to students at various standards.

Unit 4 :- Facilities and equipment for Science Teaching.

- 4.1 Science laboratory
- 4.2 Science museum, Science fair, Science club, School garden.
- 4.3 Audio-Visual aids and Improvised apparatus.
- 4.4 Reference books, teacher's hand book, Newspapers, magazines etc.

Unit 5 :- Science Teacher - His attitude, outlook, creativity and nature

Unit 6 Core content of Science.

- 6.1 Physics.
  - 6.1.1 Measurement -Length, area, volume, time, units - fundamental and derived
- 1.2 Motion - Laws of motion, types of motion linear and Rotational.
- 3.4 Classification - Plants and animals
- 3.5 Study of plants and their parts like root, stem, leaf, flower
- 3.6 Life Histories of mucor, spirogyra and Dhatuṛṣ

Cancel

3.7 Systems in Human body - digestive, respiratory, circulatory, reproductive.

3.8 Life Histories of Ameoba, earth worm frog.

Methodology for lower classes.

Demonstration, Laboratory

Techniques - question - answer, observation, collection, A.V. aids  
concept attainment model

For Higher Classes.

Demonstration, Laboratory, Hearistic, Project

Techniques - Question - answer, A.V. aids,

Advanced Organizer model, Inquiry training model

6.4 Practical work in Science.

4.1 Importance, Organizer, Precautions and Evaluation.

Area C Planning for teaching and Evaluation in Science.

Unit 7.

7.1 Planning - Year plan, Unit plan, and daily lesson plan.

7.2 Tools of Evaluation - Written test, Unit test,  
Achievement test, Diagnostic tests

7.3 Practical examination in Science.

1.3 Work and energy

1.4 Light - Sources, Characteristics of Light Reflection and  
Refraction.

1.5 Sound

1.6 Magnetism

1.7 Electricity - Static and Current

1.8 Electronics - Basic concepts.

6.2 Chemistry.

6.2.1 Periodicity and periodic table.

2.2 Properties of matter - Physical & Chemical.

2.3 Atom structure - electronic Configuration Atomic number,  
Atomic weight, concept of Isotopes, Radio activity,

2.4 Chemical bonds, Chemical, Reaction & Chemical equilibrium.

2.5 Methods of purification of substance

2.6 Mole concept. gram - atomic wt. and gram - molecular  
weight, Ionisation.

2.7 Oxidation and Reduction.

2.8 Study of elements S, P, Cl, Na, Mg, Zn, Hg, Fe.

2.9 Introduction to Organic Chemistry. Characteristics of  
Organic compounds Nomenclature of Organic compounds.  
saturated and Unsaturated hydrocarbons.

6.3 Biology.

6.3.1 Living things - Characteristics of living thing,  
Preservation of living things.

3.2 Ecosystem.

3.3 Cell and its structure - DNA, RNA, Genes, Chromosomes, Cell - Division - Mitosis

Area D. Practical work for internal assessment

- 1) Preparation of unit plan & Unit test
- 2) Preparation of an achievement test for 100 marks with a blue print.
- 3) Review of one Science text book.  
(Standard V to X)  
(any two from above)

-X-X-X-X-X-X

Ref. Books.

- 1) Teaching of Science in Secondary Schools NCERT Feb, 82.
- 2) Teaching of Science - Sharma & Sharma.
- 3) Teaching of Science - Kohali
- ४] शास्त्राचे अध्यापन - कदन - जॉन्सटॉन.
- ५] महाराष्ट्र स्टेट सेकंडरी एज्युकेशन बोर्ड पुणे यांनी तयार केलेले ८ वी ते १२ वी पर्यंतची सायन्सची पाठ्यपुस्तके.