

Course: Teaching of Chemistry
Credit Hours: 3

Introduction: This course is designed specifically to equip the prospective science teachers with the latest pedagogical knowledge required to teach the contents of Chemistry at secondary level. In addition, the course will also provide the prospective science teachers an acquaintance with the modern assessment techniques and use of laboratory and computers in the field of teaching of Chemistry.

Objectives:

Students will be able to

- Differentiate between method, technique and strategy in context of teaching.
- Describe various methods for teaching of Chemistry.
- Identify most suitable method to teach diverse topics.
- Extend their knowledge of teaching to implement various methodologies.
- Recognize the importance of teaching of Chemistry.
- Demonstrate the use of low cost no cost materials for teaching of Chemistry.
- Apply the computer technology for teaching of Chemistry.
- Use the laboratory apparatus effectively for disseminating chemical knowledge.

Course contents

1. Teaching of chemistry

- Introduction
- The Nature of science
- Scientific literacy and its importance
- Definition of sciences: Science as product and process
- The products of science
- Processes of science
- Scientific attitudes
- The nature of scientific laws, facts, concepts and theories
- Physical sciences and limitations of science
- Definition of chemistry
- Importance of chemistry in everyday life

Why teach chemistry

2. Aims and Objectives of teaching chemistry

Aims of teaching chemistry

Criteria for selection of aims

Objectives of teaching chemistry

Writing objectives

Difference between aims and objectives

3. Methods of teaching chemistry

Various methods of teaching chemistry

Lecture method

Demonstration method

Heuristic method

Assignment method

Project method

Inductive method

Deductive method

Scientific method

Problem method

Choice of method

4. The Nature of Children and Science Teaching

Piagetian theory of cognitive development

Stages of cognitive development

Characteristics of individual in various stages of cognitive development

Piaget's theory and science curriculum

Implications of Piagetian theory in facilitating learning of science

The process of learning according to Robert Gagne, Davis Ausubel and Bruner

5. Lesson Planning

Advantages of the Lesson Planning

Feature of a lesson plan

Steps in lesson plan

6. Teaching aids in chemistry

Importance of teaching aids

Principles for selection of teaching aids

Principles for effective use of teaching aids

Different types of teaching aid material

7>. Apparatus and Equipment

Introduction

Locally produces low cost equipment

Chemicals

Charts, Diagrams, Pictures and Bulletin board

Improvised Apparatus

Text books

8. The Chemistry Teacher

Duties and Responsibilities of a Chemistry teacher

Effective use of Chemistry Laboratory

Making Chemistry teaching more Interesting

9. Evaluation in Chemistry

Introduction

Designing of Test

Evaluation of Functional skills

The Assessment of Practical work

Recent Trends in Teaching of Chemistry

Evaluation Criteria

Examination	Type	Marks
Internal Examination	Sessional Work	15%
	Mid-Semester	25%
External Examination	Final Semester	60%

References

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- Gallagher-Bolos, J. A., & Smithenry, D. W. (2004). *Teaching inquiry-based chemistry: Creating student-led scientific communities*. Portsmouth, NH: Heinemann
- In García-Martínez, J., & In Serrano-Torregrosa, E. (2015). *Chemistry education: Best practices, opportunities and trends*.
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