

**Certificate Course**  
**on**  
**Basic Soil & Water Quality Testing Techniques**  
**(Skill Based Course)**



**Organised by**  
**Department of Chemistry**  
**Nowgong Girls' College**  
**Nagaon, Assam**

**Course Code: CHE-BSWT-01**

**Total Programme Duration:** 30 hrs

**About the course:** BSWT is the abbreviation of basic soil and water quality testing techniques. This course focuses on soil and water analysis methods and different analytical techniques used for quality assessment.

**Objectives of the course:**

- To learn about the chemistry and composition of soil and water.
- To develop a basic comprehension regarding soil testing in the students.
- To acquire water analysis skill.

**Course Outcome:**

- Gain knowledge on soil and water quality parameters.
- Be able to analyse soil and water samples in laboratory.

**Eligibility:** 12<sup>th</sup> Passed

**Course Coordinator:** Dr. Hemanta Kalita

Assistant Professor

Department of Statistics

Nowgong Girls' College

P.O. Haibargaon

Dist: Nagaon, Assam- 782002

Contact No.: +91 9769335072

**Course Code: CHE-BSWT-01**

**Syllabus:**

**Unit 1: Soil analysis** **3 hours**

Introduction to soil analysis, components of soil, physical and chemical properties of soil, importance of soil analysis.

**Unit 2: Water analysis** **3 hours**

Chemistry and composition of water, properties of water, water pollution and sources of pollution, water quality parameters, importance of water analysis for environment.

**Unit 3: Sample preparation of soil** **4 hours**

Methods of soil sample collection and processing, storage of sample, precautions during the process.

**Unit 4: Instruments for soil and water analysis** **8 hours**

Brief study on instruments required for analysis: pH Meter, Conductivity meter, UV-Spectrophotometer, Flame photometer, Atomic Absorption Spectrophotometer, use of water testing kit, Kjeldahl's Assembly for determination of nitrogen.

**Unit 5: Hands on training on soil and water analysis** **12 hours**

- i. Soil sample preparation
- ii. To determine pH of given soil and water sample.
- iii. To determine nutrient content (NPK) of soil.
- iv. To determine salinity of given soil sample.
- v. To determine of conductivity of soil and water.
- vi. To determine hardness of water.
- vii. To determine alkalinity of water.
- viii. To determine TDS of given sample of water.

**MODE OF ASSESSMENT:**

Exam: 50 marks

**References:**

1. Vogel, A. I. Vogel's Qualitative Inorganic Analysis 7th Ed., Prentice Hall.
2. Vogel, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Prentice Hall
3. Skoog, D.A.; West, D.M. & Holler, F.J. Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort Worth (1992)
4. G.T. Miller, Environmental Science 11th edition. Brooks/ Cole (2006).