**Enclosure-IV-4.3**

**Part-III, SEC- III:** Value Added Courses

**Offering Department:** Department of Chemistry

 (From AY 2016-17 onwards)

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| **16UCHVA03** | **Soil & Water Analysis** | **40 Hrs.** | **1 Credits** |

1. **Water Analysis – Physical examination: (03 Hrs.)**

 pH, temperature, total dissolved solid, suspended solid, acidity, alkalinity, colour, taste, smell, turbidity, hardness of water.

1. **Water Analysis – Nonmetallic inorganic constitutes** **(03 Hrs.)**

 chloride, sulphate, sulphide, fluoride, phosphate, sulphur, nitrate, nitrite, carbon dioxide, ammonia, cyanide.

1. **Water Analysis – Mineral and Toxic Ions** **(03 Hrs.)**

 Mineral ions: calcium, magnesium, iron, sodium, silver, zinc, manganese. Toxic ions: lead, mercury, arsenic, beryllium, cadmium, chromium, copper, selenium.

1. **Soil Analysis-** **Physical Test:**  **(03 Hrs.)**

Soil Texture, Water Holding Capacity, Bulk Density, Hydraulic Conductivity

1. **Soil Analysis- Chemical Test (03 Hrs.)**

 pH, Electrical Conductivity (EC), Organic Carbon ,Free Lime, macronutrients N, P, K, micronutrients Cu, Zn, Mg etc.

**List of Proposed Practical: (25 Hrs.)**

**Soil analysis-Determination of**:

1. Water holding capacity
2. Bulk density
3. Soil Reaction (pH)
4. Electrical Conductivity (EC)
5. Calcium Carbonate (CaCO3) Free Lime
6. Nitrogen, Phosphorous, Potassium

**Soil analysis-Determination of**:

1. pH
2. Electrical Conductivity (EC)
3. Carbonates & Bicarbonates
4. Calcium & Magnesium - EDTA Titrimetric Method
5. Chloride
6. Sulphate on Spectrophotometer

**Reference Books:**

1. Instrumental Analysis, H H Willard, CBS Publishing Co.
2. Handbook of Water Analysis, Third Edition, Leo M.L. Nollet, Leen S. P. De Gelder, CRC Press, ISBN 9781439889640