



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsa Munda Tribal University

राजपिपला, जि० नर्मदा Rajpipla, Dist. Narmda

Established by Tribal Development Department, Govt. of Gujarat

School of Science

B.Sc. (Chemistry) Programme

Subject Code & Name: - BS05SECHE1 & Soil Analysis Practical

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
-	-	2	2	-	25	-	25

Programme Name	B.Sc.
Semester	V
Course Code	BS05SECHE1
Course Title	Soil Analysis Practical
Course Content Type (Th./Pr.)	Practical
Course Credit	2
Sessions+ Lab. Per Week	4
Total Teaching/Lab. Hours	30 Hours
* 2 Laboratory = 1 Session	

Learning Objectives

1. Learn how to collect soil samples from the field that accurately represent the soil's characteristics.
2. Acquire techniques for air-drying, crushing, and sieving soil samples (e.g., using a 2 mm sieve) to prepare them for analysis.
3. Determine the acidity or alkalinity of soil using a pH meter or indicator.
4. Estimate the organic matter content and water content, which is crucial for soil structure and nutrient retention.

Prerequisites (if any)

Learning Outcomes

On the completion of this course, students will be able to:

1. Learn proper techniques for taking representative soil samples from the field, drying, crushing, and sieving to prepare them for laboratory analysis.
2. Develop proficiency in using analytical instruments like pH meters, electrical conductivity (EC) meters, spectrophotometers, and flame photometers.
3. Measuring acidity/alkalinity using potentiometric or indicator methods.
4. Comprehending the importance of soil testing in promoting sustainable agriculture and preventing nutrient pollution.



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsā Mūṇḍā Drāyabala Yūnīvārsīṭī

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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	List of soil analysis practical. 1. Method for soil sampling. 2. To determine the Moisture content of given soil sample. 3. To determine the Water Holding Capacity (WHC) of given soil sample. 4. To determine the Soil Texture content of given soil sample. 5. To determine the pH of given soil sample 6. To determine the Lime Requirement of given soil sample by Woodruff's Method (Woodruff, 1948) 7. To determine Electrical Conductivity (EC) of given soil sample. 8. To determine Organic Carbon/Organic Matter of given soil sample. 9. To determine Total Nitrogen (Kjeldahl Method) of given soil sample. 10. To determine Available Phosphorus of given soil sample. 11. To determine Determination of exchangeable Calcium and Magnesium of given soil sample.	30
Text Book(s)		
1.		
Reference Books		
1. Instrumental Method of Chemical Analysis, by B K Sharma, 2014, ISBN: 978-818283-673-0, Goel Publishing House. 2. Soil Analysis Handbook of Reference Methods, by J. Benton Jones Jr. (Editor) ISBN-13: 978-0849302053. 3. Hand Book of Water, Air and Soil Analysis by Anand Dev Gupta, International E – Publication. 4. Vogel's Textbook of Quantitative Chemical Analysis –Vth Edition, by G H Jeffery, J Bassett, R C Denney, Longman Sci. & Tech. Publication. 5. Fundamentals of Soil Science (Laboratory Manual of Soil Analysis), Mahendru Kumar Gautam, Dr. Ravindra Sachan, Dr. Devendra Singh, Dr. Anil Kumar, Bhavya Books 6. Practical Manual For Analysis Of Soil Water Fertilizer And Manure, Javid Ahmad Sofi,		



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Web Resources	
1. Google books, INFLIBNET, Google Web	
Required Software(s) (if any)	
Practical(s) (if any)	

L:: Lecture, **T::** Tutorial , **P::**Practical

CCE:: Continuous and Comprehensive Evaluation

(CCE Theory includes Mid Semester Examination, Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, slip tests (announced/ surprised), attendance etc. or any combination of these)

PWE:: Practical Work Examination

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

SEE:: Semester End Evaluation