

GANPAT UNIVERSITY									
FACULTY OF AGRICULTURE, ALLIED SCIENCES AND TECHNOLOGY									
Programme	B.Sc. (Hons.)				Branch/Spec.	Agriculture			
Semester	IV				Version	1.1.1.0			
Effective from Academic Year		2026-27			Effective for the Batch admitted in			July 2025	
Course Code	2IVA04PSM	Course Name			Problematic Soils and their management				
Teaching Scheme					Examination Scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	1	0	1	0	2	Theory	40	40	80
Hours	1	0	2	0	3	Practical	20	00	20
Pre-requisites									
Not Applicable									
Course Outcomes									
On successful completion of the course, the students will be able to:									
CO1	To provide knowledge about waste land and problematic soils in India and management of the soils.								
CO2	Explore the problems of the different types of soils and possibilities of their management for better and sustainable use of land and water.								
CO3	Students learn about the knowledge of soil quality and health, problematic soils of India and Gujarat.								
CO4	Students gain knowledge about classification of irrigation water and utilization of saline water.								
Theory Syllabus									
Unit	Content								Hrs.
1	Soil quality and health, Distribution of Waste land and problem soils in India, Categorization of Problem soils based on properties. Reclamation and management of Acid soils, Saline, Sodic soils, Acid Sulphate soils, Eroded and Compacted soils, polluted soils.								3
2	Contaminated soils (Pesticide contamination, Heavy metal contamination), Mined soils (Coal mined, Oil mined), Management of Riverine soils, Waterlogged soils								4
3	Irrigation water – quality and standards, utilization of saline water in agriculture. Use of Remote sensing and GIS in diagnosis and management of problem soils. Irrigation and water quality.								4
4	Multipurpose tree (MPT) species, bio remediation through MPTs of soils, land capability and classification, land suitability classification.								4
Practical Content									
<ol style="list-style-type: none"> Determination of pHs and EC of saturation extract of problematic soil. Determination of redox potential in soil, Estimation of water soluble and exchangeable cations in soil and computation of SAR and ESP and characterization of problematic soil. Determination of Gypsum requirement of alkali / sodic soil. Determination of lime requirement of acidic soil. Determination of Quality of irrigation water (pH, EC, Ca, Mg, Na, CO₃, HCO₃, Cl, SAR and RSC), Determination of nitrate (NO₃⁻) from irrigation water, Determination of dissolved oxygen and free carbon dioxide levels in water samples. 									
Text Books									
1	Brady Nyle C and Ray R Well., 2014. Nature and properties of soils. Pearson Education Inc., New D Delhi.								
Reference Books									
1	Indian Society of Soil Science., 2002. Fundamentals of Soil Science. IARI, New Delhi.								
2	Srivastava, V. C., 2002. Management of Problem Soils -Principles and Practices New Delhi								

Note: Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)

L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work
CE= Continuous Evaluation, SEE= Semester End Examination

	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	3	3	1	1	3	3	3	1	2	1
CO2	2	1	1	2	1	1	3	3	2	1	1	1
CO3	3	2	3	2	1	1	3	3	3	2	3	1
CO4	3	1	2	1	1	1	2	2	2	1	1	1
CO5	3	1	2	1	1	1	3	3	2	1	1	1

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