GANPAT UNIVERSITY									
FACULTY OF AGRICULTURE, ALLIED SCIENCES & TECHNOLOGY									
Programme	B.Sc. (Hons) Agriculture					Branch/Spec.	Agriculture		
Semester	I					Version	1.0.1.1		
Effective from Academic Year			2025-26			Effective for the batch Admitted in		July 2025	
Subject code	2IA03FSS		Subject Name			**Fundamentals of Soil Science**			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	1	-	3	Theory	40	40	80
Hours	2	0	2	-	4	Practical	20	00	20
Pre-requisites:									

Objectives of the course:

To acquaint the students with the basic concepts of Soil Science and their application in agriculture. After successful completion of the course, students will be learn…

CO-1: To Articulate and retain knowledge relevant to soil.

CO-2: The physical, chemical and biological conditions of the soil

CO-3: Acquaint with the instruments used in the soil science laboratory as well as analyze the soil samples and preparing a report.

CO-4: Gain the knowledge of bulk density an soil physical properties.

CO-5: To learn, understand and evaluate the Soil and its properties with practical study.

Theory Syllabus

Unit	Content	Hrs
1	Soil: Pedological and edaphalogical concepts. Rocks and minerals, weathering.	6
2	Silicate clays: constitution and properties, sources of charge, ion exchange, cation and anion exchange capacity and base saturation (after buffering capacity).	8
3	Soil formation, Soil organic matter, Pedogenic processes, Soil colloids: inorganic and organic, Properties of soil colloids and Ion exchange in soils, Soil profile, soil texture, soil structure.	8
4	Bulk density and particle density, soil consistency, soil temperature, soil air, soil water. Soil reaction and buffering capacity. Soil taxonomy, keys to soil orders. Soils of India.	8

Practical Content

1. Study of general properties of minerals,
2. study of minerals-silicate and non-silicate minerals,
3. study of rocks-igneous, sedimentary and metamorphic rocks;
4. study of a soil profile, collection and processing of soil for analysis,
5. study of soil texture-feel method, mechanical analysis,
6. determination particle density and soil porosity,
7. determination of soil colour,
8. study of soil structure and aggregate analysis,
9. determination of soil moisture,
10. determination of soil moisture constants field capacity; water holding capacity.

11. Study of infiltration rate of soil,
12. determination of pH and Electrical conductivity of soil.

Reference Book

1. Introductory Soil Science – By Dilip Kumar Das, Kalyani Publishers
2. Soil Fertility and Nutrient Management – By S. S. Singh, Kalyani Publishers
3. Soil Fertility and Fertilizers – By Samual L. Tisdale, Werner L. Nelson and James D. Beaton, Macmillan Publishing Company, New York
4. The Nature and Properties of Soils – By Harry O. Buckman and Nyle C.