

GANPAT UNIVERSITY									
Faculty of Agriculture, Allied Sciences & Technology									
Programme		B.Sc. (Hons)				Branch/Spec		Agriculture	
Semester		II				Version		1.0.0.0	
Effective from Academic Year			2025-26		Effective for the batch Admitted in			July 2025	
Subject code		IIA01SFM		Subject Name		<b>Soil Fertility Management</b>			
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
<b>Objectives of the course:</b>									
CO-1. To understand the essential plant nutrients and the role and function of nutrients in plants. CO-2. To study the Introduction and importance of manures and fertilizers and its recommendation. CO-3. To gain knowledge of chemical fertilizer, their composition and classification. CO-4. To study the application of fertilizer in water and about different manures. CO-5. To understand the subject with practical learning and exposure									
<b>Theory Syllabus</b>									
<b>Unit</b>	<b>Content</b>								<b>Hrs</b>
1	History of soil fertility and plant nutrition. criteria of essentiality. role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Chemistry of macro and micronutrients., Soil testing. Critical levels of different nutrients in soil								7
2	Soil fertility evaluation. Forms of nutrients in soil, plant analysis, rapid plant tissue tests. Indicator plants. Introduction and importance of manures and fertilizers. Fertilizer recommendation approaches. Methods of fertilizer recommendations to crops.								8
3	Integrated nutrient management. Chemical fertilizers: classification, composition and properties of major fertilizers, secondary and micronutrient fertilizers, Complex fertilizers, Customized fertilizers, water soluble fertilizers, Nano fertilizers, soil amendments.								8
4	Factor influencing nutrient use efficiency (NUE), methods of application under rainfed and irrigated conditions. STCR/RTNM/ IPNS, Carbon sequestration and Carbon Trading, Preparation and properties of major manures (FYM, Compost, Vermi-compost, Green manuring, Oilcakes), Fertilizer control order.								7
<b>Practical Conte</b>									
<ol style="list-style-type: none"> <li>1. Introduction of analytical instruments and their principles, calibration and applications of Colometry and flame photometry.</li> <li>2. Determination of available Nitrogen from soil.</li> <li>3. Determination of available Phosphorus from soil.</li> <li>4. Determination of available Potassium from soil.</li> <li>5. Estimation of exchangeable Ca and Mg in soils;</li> </ol>									

6. Estimation of soil extractable S in soils;
7. Estimation of DTPA extractable Zn in soils;
8. Estimation of N in plants;
9. Estimation of P in plants;
10. Estimation of K in plants;
11. Estimation of S in plants

#### **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 Samuel 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.