DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

Revised Syllabus of

B.Sc. (Second Year)

Agrochemicals and Fertilizers

Semester - III and IV

(With Credit System)

(Effective from 2010 - 2011 onwards)

DR.BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD

Agrochemicals and Fertilizers Curriculum

B.Sc. II Year

(Semester Pattern)

Course Structure

Class	Paper No	Title of Paper	Credits	Lectures	Marks
B.Sc. II		**SEMESTER – I**			
	IX	Soil Science	3	45	50
	X	Biochemistry	3	45	50
	XI	Practical based on Paper IX	3	45	50
	XII	Practical based on Paper X	3	45	50
		SEMESTER II			
	XIII	Soil Chemistry	3	45	50
	XIV	Agricultural Chem.	3	45	50
	XV	Practical based on XIII	3	45	50
	XVI	Practical based on XIV	3	45	50

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Paper - IX **Periods : 45**
Marks : 50

Soil Science

I	Definition of Soil Concept of Solun, A soil, The Soil	2 Hrs
II	Rocks and Minerals Types of Rocks, Primary and Secondary Minerals Clay Mineral, Accessory Minerals.	8 Hrs
III	Weathering Physical Chemical and biological weathering. Factors attecting soil fornation	4 Hrs
IV	Study of Vertical distribution of soil	2 Hrs
V	Soil Phy Properties and the importance in soil fertility and productivity (Ten Properties)	10 Hrs
VI	Soil Testing : Importance methods and co-relation with crop response. A note on soil testing kit.	9 Hrs
VII	Water movements and water loss from the soil system	5 Hrs

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Paper - X **Periods : 45**
Marks : 50

Biocchemistry

VIII Soil Moisture Constants and their importance in plant growth 5 Hrs.

I Force of Adhesion cohesion and colloidal force in soil
Drantage system and soil. 5 Hrs.

II Carbohydrates, Monosaccharides, Dichandes and Oilgosaccharides 5 Hrs

III a) Study of Lactose, Sucrose, Mattose, Cellulose 4 Hrs
b) Polysacchandes as starch and glycogen 4 Hrs.

IV Properties 10 Hrs
Classification Structure and properties of proteins

V Lipids
Classification and important properties of Lipids : A note on Rancidity. 10 Hrs.

VI Enzymes 7 Hrs
Classification and chemical nature of enzymes. Kinetics of enzyme action.

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Paper - XIII **Periods : 45**
Marks : 50

Soil Chemistry

I	Organic and inorganic in soils, structure and properties of soil colloids and the process of caution exchange in soils	4 Hrs
II	Relation of soil reaction and nutrients absorption in soils	4 Hrs
III	Study of soil orders with special reference to vertisol.	4 Hrs.
IV	Study of soil survey, field mapping, remote sensing	5 Hrs.
V	Land capability classification Class I to VIII	3 Hrs
VI	Soil organic Matter. Important microbial transformations	8 Hrs.
VII	Soil Micro-Organisms Important microbial transformations	9 Hrs
VIII	Mechanism of nutrient absorption by plants Methods of nutrient absorption	8 Hrs

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Paper - XIV **Periods : 45**
Marks : 50

Agricultural Chemistry

I	Photosynthetic efficiency of C4 Plants	4 Hrs
II	Factors affecting photosynthesis	4 Hrs
III	Nature, properties and functions of important plant pigments.	4 Hrs
IV	Classification, chemical nature, properties, deficiency Symtoms of vit A, D, E, K, C and B	10 Hrs
V	A) Nutritional importance of food constituents B) Nutritional disorders and control	8 Hrs
VI	Digestion, absorption and excretion of food in animal body	8 Hrs
VII	Agro industries Sericulture (Silk Production) and verniculture (earthworm production) as Agro Industry	7 Hrs

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Paper - XI **Periods : 45**
practical **Marks : 50**

Note : Duration of practicals should be four periods per week.

I) Collection of Rock and Mineral samples from the area.

II Method of collection of soil sample.

III Preparation and preservation of soil sample in laboratory.

IV Study of soil Augers and collection of soil sample with the help of Augers.

V Determination of Water holding capacity of soil.

VI To determine apparent specific gravity of soil.

VII To determine absolute specific gravity of soil.

VIII To determine percentage expansion of soil colloids.

IX Use and applications of soil thermometer.

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Paper - XII **Periods : 45**
practical **Marks : 50**

Note : Duration of practicals should be four periods per week.

I Determination of moisture from soil sample.

II Determination of soil colour using a soil kit.

III Preparation of HCL extract of soil.

IV Determination of Ferrous from HCL extract.

V Determination of phosphate from HCL extract.

VI Determination of Calcium from HCL extract.

VII Visit to sericulture industry.

VIII Visit to Vermiculture Industry

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Laboratory course - II
Paper - XI **Periods : 45**
Practical **Marks : 50**

Note : Duration of practicals should be four periods per week.

I) Determination of moisture from plant sample.

II Determination of mineral matter from plant sample.

III Colour test of protein and carbohydrates (Qualitative test)

IV Estimation of reducing sugar from sugar cane juice.

V Estimation of non-reducing sugar from oil sample.

VI Determination of acid value from oil sample.

VII Estimation of reducing and non-reducing sugar from Jaggary sample.

VIII Determination of saponification value from coconut oil.

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Laboratory course - XIV
Practical **Periods : 45**
Marks : 50

Note : Duration of practicals should be four periods per week.

I Separation of plant pigments from plant samples.

II Estimation of Vit. C from Fruit Juice. (Lemon Juice)

III Determination of moisture from concentrates given to feeding cattle.

IV Determination of mineral ash from oil cake.

V Preparation of mixing of farm and poultry feed.

VI Determination of Nitrogen from soil using soil kit.

VII Determination of phosphate from soil using soil kit.

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Reference Books :
(Theory & Practical)

Periods : 45
Marks : 50

1 Hand book of Vermiculture - Bhawalkar

2 Hand book of Practical sericulture - CS.B. Mumbai.

3 Fundamenta`'el of soil science - Forth and Turk.

4 Nature and properties of soil by Brady.

5 Soil fertility and fertilizers by Tisdate.

6 Soil fertility : Theory and practice by J.S. Kanwar.

7. Soil condition and plant growth by Russel.

8. Soil their chemistry and fertility in tropical Asia by Tahmane and Motiramani.

9. Essentials of physiological chemistry by A.K. Anderson.

10. Text book of Biochemistry by West and Todd.

11. Introduction to modern biochemistry by P. Carlon.

12. Plant Biochemistry by Bonner.

13. Analytical Agricultural Chemistry by J.S. Kanwar and S.L. Chopra.

14. Chemical analysis by Jackson.

15. Analysis of Soil by Hase.

16. Experimental Biochemistry by G. Litwalk.