

नए और संरचित
उच्च शिक्षा बोर्ड

**NEW AND RESTRUCTURED
POST GRADUATE CURRICULA AND SYLLABUS**

for

Agronomy

Dr. Rammanohar Lohia Avadh University, Ayodhya (U.P.)

M.Sc. (Ag.) Agronomy

Fourth Semester

(Semester System as per ICAR 5th Dean Committee Recommendations)

w.e.f. 2020 - 2021




Submitted by :

Dean & Conveners, Board of Studies

Faculty of Agriculture

Dr. Rammanohar Lohia Avadh University, Ayodhya (U.P.)



M.Sc. (Ag.) Agronomy

Ist Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AGR. - 501	Modern Concept in Crop Production	3(2+1)	20	50	30	100
AGR. - 503	Principles and Practices of weed Management	3(2+1)	20	50	30	100
AGR. - 506	Scientific Cultivation of Major cereals and Pulses	3(2+1)	20	50	30	100
AS. - 501	Agricultural Statistics	3(2+1)	20	50	30	100
	Total Credit	12				
IIInd Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AGR. - 502	Principles and Practices of Soil Fertility and Nutrient Management	3(2+1)	20	50	30	100
AGR. - 504	Principles and Practices of Water Management	3(2+1)	20	50	30	100
AGR. - 507	Scientific Cultivation of Oil Seeds, Fiber and Sugar Crops	3(2+1)	20	50	30	100
AGR. - 511	Cropping system and sustainable Agriculture	3(2+1)	20	50	30	100
	Total Credit	12				
IIIrd Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AGR. - 509	Agronomy of Fodder and Forage Crops	3(2+1)	20	50	30	100
AGR. - 510	Agrostology & Agroforestry	3(2+1)	20	50	30	100
AGR. - 512	Dry Land Farming and Watershed Management	3(2+1)	20	50	30	100
CA. - 502	Computer Application in Agriculture	2(1+1)	20	50	30	100
PGS - 501	Library and Information Services (Non-Gradual Satisfactory/Unsatisfactory 50% Marks required for satisfactory Grade)	1(0+1)			100	100
	Total Credit	12				
IVth Semester			Evaluation Marks			
Code No.	Course Title	Credit Hours	Mid Term	End Term	Practical	Total
AGR. - 591	Master Seminar	1(0+1)				100
AGR. - 599	Master Research (Thesis)	20	Satisfactory/Unsatisfactory			
OR						
Special Papers - (20 - Credit) Satisfactory/Unsatisfactory						
AGR. - 513	Principles and Practices of Organic Farming	4(3+1)	20	50	30	100
AGR. - 505	Agrometeorology and Crop Weather Forecasting	4(3+1)	20	50	30	100
AGR. - 508	Agronomy of Medicinal, Aromatic and under Utilized Crops	4(3+1)	20	50	30	100
AGR. - 514	Crop Production in Problematic Soils	4(3+1)	20	50	30	100
AGR. - 515	Diagnosis of Nutritional Deficiency in Field Crops and their Remedial Measure	4(3+1)	20	50	30	100
	Total Credit	21				
	Total Credit Hours	57				

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Fourth Semester Curricula & Syllabus

S. No.	Course Code	Title of the Course	Credit
1	AGR. - 591	Master Seminar	1(0+1)
2	AGR. - 599	Master Research (Thesis)	20

OR

Five Special Papers - (20 - Credit) Satisfactory/Unsatisfactory

1	AGR. - 513	Principles and Practices of Organic Farming	4(3+1)
2	AGR. - 505	Agrometeorology and Crop Weather Forecasting	4(3+1)
3	AGR. - 508	Agronomy of Medicinal, Aromatic and under Utilized Crops	4(3+1)
4	AGR. - 518	Crop Production in Problematic Soils	4(3+1)
5	AGR. - 515	Diagnosis of Nutritional Deficiency in Field Crops and their Remedial Measure	4(3+1)
Total Credit Hours			21



M.Sc. (Ag.) AGRONOMY - IV Semester Syllabus

AGR - 513 (Paper - I)

PRINCIPLES AND PRACTICES OF ORGANIC FARMING 4(3+1)

Theory :

UNIT - I

Organic farming - concept and definition, its relevance to India and global agriculture and future prospects; land and water management - land use, minimum tillage, shelter zones, hedges, pasture management, agro-forestry.

UNIT - II

Organic farming and water use efficiency, soil fertility, nutrient recycling, organic residues, organic manures, composting, soil biota and decomposition of organic residues, earthworms and vermicompost, green manures and biofertilizers.

UNIT - III

Farming systems, crop rotations, multiple and relay cropping systems, inter cropping in relation to maintenance of soil productivity.

UNIT - IV

Control of weeds, diseases and insect pest management, biological agents and pheromones, biopesticides.

UNIT - V

Socio-economic impacts; marketing and export potential: inspection, certification, labeling and accreditation procedures; organic farming and national economy.

Practical :

- Aerobic and anaerobic methods of making compost
- Making of vermicompost
- Identification and nursery raising of important agro-forestry trees and trees for shelter belts.
- Efficient use of biofertilizers, techniques of treating legume seeds with Rhizobium cultures, use of Azotobacter, Azospirillum and PSB cultures in field.
- Quality standards, inspection, certification, labeling and accreditation procedures for farm produce from organic farms.
- Visit to an organic farm.

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M.Sc. (Ag.) AGRONOMY - IV Semester Syllabus

AGR - 505 (Paper - II)

AGROMETEOROLOGY AND CROP WEATHER FORECASTING

4(3+1)

Theory :

UNIT - I

Agro meteorology-aim, scope and development in relation to crop environment; composition of atmosphere, distribution of atmospheric pressure and wind.

UNIT - II

Characteristics of solar radiation; energy balance of atmosphere system; radiation distribution in plant canopies, radiation utilization by field crops; photosynthesis and efficiency of radiation utilization by field crops; environmental temperature: soil, air and canopy temperature.

UNIT - III

Temperature profile in air, soil, crop canopies; soil and air temperature effects on plant processes; environmental moisture and evaporation: measures of atmospheric temperature and relative humidity, vapour pressure and their relationships; evapo-transpiration and meteorological factors determining evapotranspiration.

UNIT - IV

Monsoon : monsoon and their origin, characteristics of monsoon; onset, progress and withdrawal of monsoon;

UNIT - V

Weather forecasting in India- short, medium and long range forecasting; benefits of weather services to agriculture, Remote Sensing application in agriculture and its present status in India; atmospheric pollution and its effect on climate and crop production; climate change and its impact on agriculture.

Practical :

- Visit to agro-meteorological observatory and to record sun-shine hours, wind velocity, wind direction, relative humidity, soil and air temperature, evaporation, precipitation and atmospheric pressure
- Measurement/estimation of evapo-transpiration by various methods
- Measurement/estimation of soil water balance
- Rainfall variability analysis.
- Determination of heat-unit requirement for different crops.
- Measurement of crop canopy temperature
- Measurement of soil temperatures at different depths.
- Remote sensing and familiarization with agro-advisory service bulletins
- Study of synoptic charts and weather reports, working principle of automatic weather station.
- Visit to solar observatory.

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AGR - 508 (Paper - III)

**AGRONOMY OF MEDICINAL, AROMATIC AND
UNDER-UTILIZED CROPS**

4(3+1)

Theory :

UNIT - I

Importance of medicinal and aromatic plants in human health, national economy and related industries, classification of medicinal and aromatic plants according to botanical characteristics and uses.

UNIT - II

Climate and soil requirements; cultural practices; yield and important constituents of medicinal plants (Rauwolfia, Aloe Vera, Satavar, Safed Musli, Ashwagandha, etc).

UNIT - III

Climate and soil requirements; cultural practices; yield and important constituents of aromatic plants (Citronella, Palmarosa, Mentha, Basil (Tulsi), Lemon grass, Rose, etc.).

UNIT - IV

Climate and soil requirements; cultural practices; yield of under-utilized crops (Lathyrus, Sesbania, Clusterbean, French bean, Fenugreek, Tea and Tobacco).

Practical :

- Identification of crops based on morphological and seed characteristics
- Raising of herbarium of medicinal, aromatic and under-utilized plants
- Quality characters in medicinal and aromatic plants
- Methods of analysis of essential oil and other chemicals of importance in medicinal and aromatic plants.

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M.Sc. (Ag.) AGRONOMY - IV Semester Syllabus

AGR - 514 (Paper - IV) CROP PRODUCTION IN PROBLEMATIC SOILS 4(3+1)

Objective: To impart knowledge of problem soils and their management, attention will be on crop production in problem soils and their reclamation.

Theory :

UNIT - I

Problem soils and their distribution in India; acid, saline and waterlogged soils: origin of problematic soils and factors responsible.

UNIT - II

Response of crop to acidity, salinity, sodicity, excess water and nutrient imbalance.

UNIT - III

Reclamation of problem soils, role of amendments and drainage. Lime requirement for acid soils and gypsum requirement for sodic soils.

UNIT - IV

Crop production techniques in problem soils-crops, varieties, cropping system and agronomic practices.

UNIT - V

Effects of water table fluctuation on crop growth. Degraded lands and their rehabilitation.

Practical :

- Characterization of acid, salt affected and calcareous soils.
- Lime requirement of acid soils.
- Gypsum requirement of Sodic Soils.
- Determination of cations (Na^+ , K^+ , Ca^{++} , and Mg^{++}) in soil samples
- Determination of anions (Cl , So_4 , Co_3) in soil samples.
- Reclamation of problem soils by agronomic practices



M.Sc. (Ag.) AGRONOMY - IV Semester Syllabus

AGR - 515 (Paper - V)

**Diagnosis of Nutritional Deficiency in Field Crops and their
Remedial Measure**

4(3+1)

Theory :

Deficiency symptoms of individual elements - macro, micro exhibited by cereals, oilseeds, pulses, fibre crops, forage crops, sugar crops, tuber crops, causes of deficiency, physiological changes brought about in plants due to deficiency. Plants parts showing the symptoms critical level of nutrient elements of deficiency, indicator plants for different elements. Toxicity limits of different elements. Toxicity systems. Prevention alleviation of deficiency toxicity, similarity of deficiency symptoms with disease symptoms.

Practical :

- Principles of colorimetry
- Flame-photometry and atomic absorption spectroscopy
- Chemical analysis of soil for total and available nutrients
- Analysis of plants for essential elements.

