

# Vidyasagar University

## Curriculum for Agro - Service (Major) [Choice Based Credit System]

### Semester-V

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC- 11		C11T: Agricultural Extensions	Core Course-11	4	0	0	6	75
		- Practical		0	0	4		
CC- 12		C12T Agriculture Pest Management	Core Course-12	4	0	0	6	75
		- Practical		0	0	4		
DSE-1		TBD	Discipline Specific Elective - 1	4	0	0	6	75
				0	0	4		
DSE-2		TBD	Discipline Specific Elective - 2	4	0	0	6	75
				0	0	4		
<b>Semester Total</b>							<b>24</b>	<b>300</b>

**L= Lecture, T= Tutorial, P = Practical, CC - Core Course, TBD - To be decided, DSE: Discipline Specific Elective.**

## **SEMESTER- V**

### **List of Core Course (CC)**

**CC-11: Agricultural Extensions**

**CC-12: Agriculture Pest Management**

### **Discipline Specific Electives (DSE)**

**DSE-1: Natural Resource and Farm Management Economics**

**Or**

**DSE-1: Introduction to Plant Biotechnology**

**DSE-2: Crop Diseases and their Management**

**Or**

**DSE-2: Weed Management**

## Core Course (CC)

### **CC-11: Agricultural Extensions**

**Credits 06**

### **C11T : Agricultural Extensions**

**Credits 04**

#### **Course Contents:**

1. Agricultural Extension Education: Definition, Scope, Objectives, Philosophy and Principles.
2. Extension Teaching and Learning: Teaching, Teaching Elements, steps in Teaching, Learning, Learning Situation, Basic Principles of Teaching and Learning.
3. Early Extension Efforts in India, Comparative study of Extension Service in India and USA
4. Innovative information sources: Internet, Cyber cafes, Video and Tele conferences, Kisan Call Centers, Agricultural journalism, Agri-clinic, Idea about Kisan Mandi.
5. Community Development: Meaning, Definition and objectives of community development.
6. Organizational set up and Activities of Community development at State, District, Block and Village level.
7. Extension and Rural Development Programmes: Including T&V system, National Demonstration, IRDP, Jawahar Rojgar Yozana.
8. Communication and Extension Teaching methods.

### **C11P: Practical**

**Credits 02**

#### **Practical**

1. Conducting Survey in locality for different agricultural practices and extension.
2. Idea about the preparing schedule and Questionnaire for studying the organizational set up of community development.
3. Discussion with the farmers and educating them in new technology of Agriculture.
4. Development programme for a village and a Block.
5. Preparation of an outline and practice on evaluation of a programme.
6. Classification, Tabulation and diagrammatic representation of data.
7. Writing study Reports.

#### **Suggested Books/ Reading:**

- a) Extension Communication and Management by G.L. Ray
- b) Agricultural Extension by Sagar Mondal, Kalyani Publishers
- c) Methods of Community Participation Somesh Kumar, Vistaar Publication, New Delhi.
- d) Participatory rural appraisal and questionnaire survey, Neela Mukherjee Concept

## **CC- 12: Agriculture Pest Management**

**Credits 06**

### **C12T: Agriculture Pest Management**

**Credits 04**

#### **Course Contents:**

1. Idea about agricultural Pest Management
2. General grouping of Pesticides
3. Methods of insect control including mechanical, physical, cultural, biological, legal and chemical control of insecticides, repellents antifeedants; Attractants, chemosterilants, pheromones and insect growth regulators.
4. Basic concept of integrated pest management.
5. Fumigation – different fumigants and their application techniques.
6. General account of non-insect pests with particular reference to rodents.
7. Nematodes, mites and mollusks.
8. Pesticidal pollution and hazards, and their management.
9. Elementary knowledge of plant protection equipment.
10. Biological pest management (*Bacillus thuringiensis*, *Trichoderma*, *Neem*); traditional pest management - local rituals.
11. Preparation, use and application of home-made pesticides

### **C12P: Practical**

**Credits 02**

#### **Practical**

1. Collection and preservation of specimens (with dry and wet), herbarium preparation.
2. Safety precaution measures before and during application of pesticides.
3. Dilution and application of insecticides.
4. Handling of equipments used in different types of plant protection.
5. Field visit in both summer, monsoon and winter season to nearby farmer's field and of one crop covered in theory and identification and listing of insect damage, diseases and insect pests.
6. Practical record and viva- voce.

#### **Suggested Books/ Reading:**

- a) Plant Protection: Principles and Practices: S.B. Chattopadhyay.
- b) Principles & Practices of Kharif Crops: CCSHAU, Hisar
- c) Principles and Practices of Rabi Crops: CCSHAU, Hisar
- d) Plant Diseases- R.S. Singh
- e) Agriculture Pests of South Asia and their Management: A.S. Atwal and G.S. Dhaliwal.

## Discipline Specific Electives (DSE)

**DSE-1: Natural Resource and Farm Management Economics** **Credits 06**

**DSE1T: Natural Resource and Farm Management Economics** **Credits 04**

### **Course Contents:**

1. Natural Resource Economics: Definition, subject matter and scope of economics; Micro Economics and Macro Economics within both static and dynamic framework.
2. Definition, subject matter and significance of agricultural economics.
3. Economic Development, role of agriculture Technological change in agriculture and various inter-relationships; Task of an economic system, role of economic theory in agriculture.
4. Farm Management Economics: Definition and scope of farm economics and management
5. Farm Management and production economics.
6. Management decisions and cultivators' holdings.
7. Economic Principles their role in farm management. Application of economic Principles/Laws.
8. Law of Diminishing, Returns/Principle of variable Proportions laws of return, scale properties, Law of Equi-marginal Returns, Law of such situation, opportunity cost/opportunity Returns, Law of comparative advantage.
9. Tools of Farm Management: Farm Budgeting (Complete and partial budgeting) and farm planning, Linear Programming (Graphical method).
10. Types of uncertainty in agriculture (Price uncertainty, yield uncertainty, innovation uncertainty Social and legal frame as a source of uncertainty).
11. Diversification (complementary and supplementary relationships) as a mechanism to minimize uncertainty), crop and cattle insurance, pump set insurance Arguments for and against.

**DSE-1P: Natural Resource and Farm Management Economics** **Credits 02**

### **Practical:**

1. Socio-economic survey and collection of data, classification and tabulation with special reference to natural resources of a village.
2. Study of a farm holding (resources, enterprises, costs, profit and complete farm economy) of the allotted farmer by cost-accounting method.
3. Preparation of an alternative farm plan for the farmer.
4. Submission of Report.

**Or**

## **DSE-1: Introduction to Plant Biotechnology**

**Credits 06**

### **DSE1T: Introduction to Plant Biotechnology**

**Credits 04**

#### **Course Contents:**

1. Definition scope and importance of plant biotechnology.
2. Outlines of basic steps involved in plant biotechnology/ genetic engineering such as
  - Isolation of plant DNA and vector DNA
  - Restriction of DNA by endonucleases.
  - Electrophoresis of restricted DNA fragments.
3. Cloning vectors for recombinant DNA such as-
  - Ti-plasmid vector for higher plants.
  - Plant viruses such as cauliflower mosaic virus (Ca MV), tobacco mosaic virus (TMV) and gemineae virus as vectors.
4. Applications of plant genetic engineering in crop improvement.
5. Plant tissue culture;
  - Culture media used in plant tissue culture.
  - Somaclonal and gametoclonal variation in plants.
  - Micro - propagation of plants.
  - Application of plant tissue culture in crop improvement.

### **DSE-1P: Introduction to Plant Biotechnology**

**Credits 02**

#### **List of Practical**

1. Requirement for plant tissue culture laboratory.
2. Media components and preparations.
3. Sterilization techniques and inoculation of various explants.
4. Micro propagation of important crops Anther, Embryo and Endosperm culture.
5. Demonstration of Isolation of DNA and gel – electrophoresis techniques.

#### **Suggested Books/ Reading:**

- a) Introduction to Plant Biotechnology: Chawla H.S., Publisher: Oxford & IBH Publishing Co. Pvt. Ltd.
- b) Plant Biotechnology- The genetic manipulation of plant: Adrian Slater, Nigel Scott, Mark Fowler, Oxford & IBH Publishing Co. Pvt. Ltd.

## **DSE- 2: Crop Diseases and their Management**

**Credits 06**

### **DSE2T: Crop Diseases and their Management**

**Credits 04**

#### **Course Contents:**

1. General Symptoms of plant diseases.
2. Methods of plant disease management.
3. Preliminary knowledge of different groups of fungicides.
4. Study of the symptoms, etiology, mode of perpetuation and management of the following diseases: White rust of crucifers, Green ear disease of bajra, Covered smut of barley, Grain smut of Jowar, Bajra smut, Rust of linseed, Leaf spot or Tikka disease of groundnut, Stripe disease of barley, Blast of rice, Khaira disease of paddy, Black tip of mango, Tobacco mosaic, Bean common mosaic, Little leaf of brinjal

### **DSE2P: Crop Diseases and their Management (Practical)**

**Credits 02**

#### **List of Practical**

1. Diagnosis of important diseases by studying symptoms.
2. Microscopic examination of diseased parts.
3. Preparation of Bordeaux mixture.
4. Practical record
5. Laboratory note book and Viva Voce.

**Or**

## **DSE-2: Weed Management**

**Credits 06**

### **DSE2T: Weed Management**

**Credits 04**

#### **Course Contents:**

1. Definition, classification and general characteristics of weeds, Losses caused by weeds.
2. Principles and methods of solving weed problem.
3. Weed control schedules for important field crops of U.P.
4. Integrated weed management system and its importance.
5. Control of Abnoxious weeds viz. Sedge grass, Kane, Baisuri and Satyanasi.

**List of Practical:**

1. Identification and preservation of important weeds of locality.
2. Calculation on quantities of herbicides, weed control efficiency and weed index.
3. Calculation of cost involved in different weed control schedules.

**Suggested Books/ Readings**

1. Kadiyali, L. R., Traffic Engineering and Transportation Planning, Khanna Publishers, New Delhi
2. Hutchison, B. G., Introduction to Transportation Engg and Planning, McGraw-Hill Book Co.
3. Morlok, Edward K., Introduction to Transportation Engg. and Planning. McGraw-Hill Book Co.
4. Vuchic, Vukan R, Urban Public Transit System and Technology, PHI Learning, New Delhi
5. The properties and performance of modern alternate fuels SAE paper No 841210.
6. Dickey, John W. Metropolitan Transportation Planning, McGraw-Hill Book Co.

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