

Vidyasagar University

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

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		C5T: Crop health, problems and diagnosis – Cereals, Pulses and Oil Seeds	Core Course-5	4	0	0	6	75
		C5P: Practical		0	0	4		
CC-6		C6T: Crop health problems and diagnosis – Vegetables, Fruits, Flowers and Fiber yielder	Core Course-6	4	0	0	6	75
		C6P: Practical		0	0	4		
CC-7		C7T: Fertilizers Manures & Bio-fertilizers	Core Course-7	4	0	0	6	75
		C7P: Practical		0	0	4		
GE-3		TBD	Generic Elective-3				4/5	75
							2/1	
SEC-1		TBD	Skill Enhancement Course-1	1	1	0	2/1	50
							2	
Semester Total							26	350

L=Lecture, **T**=Tutorial, **P**=Practical, **CC**=Core Course, **TBD** =To be decided, **AECC**=Ability Enhancement Compulsory Course.

Generic Elective (GE) (Interdisciplinary) from other Department [Paper will be of 6 credits]. Papers are to be taken from following discipline: **Botany/Chemistry/ Physics/Zoology/ Economics**.

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (**GE1 to GE4**) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (**GE**) of a subject or discipline specified for the relevant semester.

SEMESTER-III

CORE COURSE (CC)

CC-5: Crop Health, Problems and Diagnosis – Cereals, Pulses and Oil Seeds

Credits 06

C5T: Crop health, problems and diagnosis – Cereals, Pulses and Oil Seeds Credits 04

Course Contents:

1. Causes of health Problems of crops
Pest: Insects & non-insects, rodents, nematodes, birds, snails.
Disease: fungal, bacterial, viral
2. Diagnosis of health problems of cereals, pulses and oil seeds.
 - a) Rice stem borer, BPH, Gall midge, leaf folder, hispa, Gandhi bug, Bacterial blight, sheath blight, brown spot blast, false smut, root & short rot, ufra (3n deficiency)
 - b) Wheat – seedling blight, smut, rust.
 - c) Pulses – Aphids, Pod borer, hairy caterpillar, stem fly, Podfly mosaic, powdery mildew, root rot, wilt, blight
 - d) Oil seeds – aphid, leafwebber, hairy caterpillar, termite, leaf blight, rust, club root, foot rot.

C5P: Practical

Credits 04

List of Practical:

1. Identification of damage of rice plant due to, (a) stem borer, (b) BPH, (c) gall midge, (d) leaf folder, (e) hispa, (f) gandhibug, (g) bacterial blight, (h) sheath blight, (i) brown spot blast, (j) false smut, (k) root and shoot rot, (l) ufra.
2. Identification of damage of wheat by, (a) seedling blight, (b) smut, and (c) rust.
3. Identification of damage of Pulses due to, (a) aphids, (b) pod borer, (c) hairy caterpillar, (d) stemfly, (e) podfly, (f) mosaic, (g) powdery mildew, (h) root rot, (i) wilt, and (j) blight
4. Identification of damage of Oil seeds due to (a) aphid attack, (b) leaf webber, (c) hairy caterpillar, (d) termite, (e) leaf blight, (f) rust, (g) club root (h) foot rot.
5. Field visits for recording seasonal diseases and pests.
6. Collection of specimen and herbarium preparation.
7. Identification and enlisting of diseases and insect pests.
8. Visual diagnosis of nutrient deficiency syndrome in plants.

CC-6: Crop health problems and diagnosis – Vegetables, Fruits, Flowers and Fiber yielder

Credits 06

C6T: Crop health problems and diagnosis – Vegetables, Fruits, Flowers and Fiber yielder

Credits 04

Course Contents:

1. Diagnosis of health problems of vegetables, fruits, flower and fiber yielder.

a) Vegetables:

- i) Solanaceae – aphids, cut worms, fruit & shoot borer, mealy bug, epilachna beetle; root rot, wilt.
- ii) Malvaceae - Jassids, Whitefly, aphids, leaf folder, fruit, borer, mosaic, wilt, root knot.
- iii) Curcubitaceae - epilachna beetle, red punk beetle; mosaic, powdery mildew, wilt, root knot, root rot, downy mildew.
- iv) Cruciferae – aphids, caterpillar, cabbage, head borer, black rot, Mo & B deficiency in cauliflower.

b) Fruits:

- i) Mango: hopper, mealy bug, fruit fly, borer, malformation, leaf blight, fruit rot.
- ii) Citrus, leaf miner, white fly, scale, canker, die back, scab.
- iii) Banana: Weevil, wilt, pseudostem rot, sigatoka, bunchy top
- iv) Guava: wilt, root rot, scab.
- v) Coconut: rhinoceros beetle, wilt, bud rot, fruit drop.

c) Flowers: Scale, mealy bug, aphid, leaf webber, dicback, powdery mildew, leaf blight, slow wilt.

d) Jute: Semi looper, hairy caterpillar, root-knot; stem rot, wilt.

C6P: Practical

Credits 02

List of Practical

1. Identification of damage of Vegetables due to,
 - (a) Aphids, cut worms, shoot & fruit borer, mealy but, epilachna beetle, root rot, wilt for Solanaceous vegetables.
 - (b) Jassids, white fly, aphids, leaf folder, fruit borer, mosaic, wilt, root knot for Malvaceous vegetables.
 - (c) Epilachna beetle, red punk beetle, mosaic, powdery mildew, wilt, root knot, downy mildew of Cucurbitaceae vegetables.
 - (d) Aphids, caterpillar, head borer, black rot and molybdenum and boron deficiency of cruciferous vegetables.
2. Identification of –
 - (a) Hopper, mealy bug, fruit fly, borer, leaf blight and fruit rot of mango.
 - (b) Leaf miner, white fly, canker, die back and scab of citrus.
 - (c) Weevil, wilt, pseudo stem rot, stigatoka and bunchy top of banana.

- (d) Wilt, root rot and scab of guava.
 - (e) Rhinoceros beetle, wilt, bud rot and fruit drop of coconut.
3. Identification of scale, mealy bug, aphid, leaf webber, dieback, powdery mildew, leaf blight, slow wilt of flowers.
 4. Identification of semi looper, hairy caterpillar, root knot, stems rot and wilt of jute.
 5. Demonstration of control of rodent, termite and birds.
 6. Demonstration of weed control in rice field.
 7. Demonstration of fumigation of store.

CC-7: Fertilizers Manures & Bio-fertilizers

Credits 06

C7T: Fertilizers Manures & Bio-fertilizers

Credits 04

Course Contents:

1. Fertilizers: Macro and Micro, elements essential for plant growth.
2. Straight, complex and mixed fertilizers.
3. N. P.K. carrying fertilizers – their agronomic efficiency.
4. Secondary nutrient (Cu, Mg, S) supplying fertilizers.
5. Micro-nutrients, their importance.
6. Fertilizer management, Fertilizer calculation.
7. Importance of organic manures in crop production.
8. Different groups of bulky and concentrated manures – their importance in soil fertility and crop health.
9. Preparation of bulky organic manures – composting, phosphor compost, vermi-compost.
10. Bio-fertilizers
 - i) *Rhizobium*, *Azotobacter*
 - ii) Cyanobacteria (BGA), *Azolla*: their multiplication and field application.
11. Importance of soil fertility in relation to crop production, nutrient necessary, Organic, inorganic, different sources, Importance of organic fertilizer, manures, compute bio-fertilizer, Phosphocompost, micro- nutrient management, vermicompost, green manure.

C7P: Practical

Credits 02

List of Practical:

1. Familiarization with chemical fertilizers available in market.
2. Calculation of fertilizer.
3. Familiarization with different qualities of organic manures and identification of ideal features of them.
4. Familiarization with bio-fertilizers available in the market.
5. Demonstration of root nodules by *Rhizobium*.
6. Demonstration of *Rhizobium*, *Azotobacter*, Blue Green Algae under microscope and *Azolla* and their characterization.

Skill Enhancement Course (SEC)

SEC-1: Plant Diversity and Human Welfare

Credits 02

SEC1T: Plant Diversity and Human Welfare

Course Contents

Unit 1: Plant diversity and its scope - Genetic diversity, Species diversity, Plant diversity at the ecosystem level, Agro biodiversity and cultivated plant taxa, wild taxa.

Values and uses of Biodiversity: Ethical and aesthetic values, Precautionary principle, Methodologies for valuation, Uses of plants, Uses of microbes.

Unit 2: Loss of Biodiversity: Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity, Projected scenario for biodiversity loss.

Unit 3: Management of Plant Biodiversity: Organizations associated with biodiversity management- Methodology for execution- IUCN, UNEP, UNESCO, WWF, NBPGR; Biodiversity legislation and conservations, Biodiversity information management and communication.

Unit 4: Conservation of Biodiversity: Conservation of genetic diversity, species diversity and Eco-system diversity, *In situ* and *ex situ* conservation, Social approaches to conservation, Biodiversity awareness programmes, Sustainable development.

Unit 5: Role of plants in relation to Human Welfare; a) Importance of forestry their utilization and commercial aspects b) Avenue trees, c) Ornamental plants of India. d) Alcoholic beverages through ages. Fruits and nuts: Important fruit crops their commercial importance. Wood and its uses.

Or

SEC-1: Intellectual Property Rights

Credits 02

SEC1T: Intellectual Property Rights

Course Contents

Unit 1: Introduction to intellectual property right (IPR): Concept and kinds. Economic importance. IPR in India and world: Genesis and scope, some important examples. IPR and WTO (TRIPS, WIPO).

Unit 2: Patents: Objectives, Rights, Patent Act 1970 and its amendments. Procedure of obtaining patents, working of patents. Infringement.

Unit 3: Copyrights: Introduction, Works protected under copyright law, Rights, Transfer of Copyright, Infringement.

Unit 4: Trademarks: Objectives, Types, Rights, Protection of goodwill, Infringement, Passing off, Defences, Domain name.

Unit 5: Geographical Indications: Objectives, justification, International position, multilateral treaties, National level, Indian position.

Unit 6: Protection of Traditional Knowledge: Objective, Concept of traditional knowledge, Holders, Issues concerning, Bio-Prospecting and Bio-Piracy, Alternative ways, Protect ability, need for a Sui-Generis regime, Traditional Knowledge on the International Arena, at WTO, at National level, Traditional Knowledge Digital Library.

Unit 7: Industrial Designs: Objectives, Rights, Assignments, Infringements, Defences of Design Infringement

Unit 8: Protection of Plant Varieties: Plant Varieties Protection-Objectives, Justification, International Position, Plant varieties protection in India. Rights of farmers, Breeders and Researchers. National gene bank, Benefit sharing. Protection of plant varieties and Farmers' Rights Act, 2001.

Unit 9: Information Technology Related Intellectual Property Rights:

Computer software and intellectual property, Database and Data protection, Protection of semi-conductor chips, Domain name protection

Unit 10: Biotechnology and Intellectual Property Rights: Patenting Biotech Inventions: Objective, applications, concept of novelty, Concept of inventive step, Microorganisms, Moral issues in patenting biotechnological inventions.

Or

SEC-1: Entrepreneurship Development

Credits 02

SEC1T: Entrepreneurship Development

Course Contents:

UNIT- I: Introduction - Meaning, Needs and Importance of Entrepreneurship, Promotion of entrepreneurship, Factors influencing entrepreneurship, Features of a successful entrepreneurship.

UNIT- II: Establishing an Enterprise - Forms of business organization, Project identification, Selection of the product, Project formulation, Assessment of project feasibility.

UNIT-III: Financing the Enterprise - Importance of finance / loans and repayments, Characteristics of Business finance, Fixed capital management: Sources of fixed capital, working capital its sources and how to move for loans, Inventory direct and indirect raw materials and its management.

UNIT-IV: Marketing Management - Meaning and Importance, Marketing-mix, product management – Product line, Product mix, stages of product like cycle, marketing Research and Importance of survey, Physical Distribution and Stock Management.

UNIT-V: Entrepreneurship and International Business - Meaning of International business, Selection of a product, Selection of a market for international business, Export financing, Institutional support for exports.