Program : Advanced Diploma in Agriculture and Soil Sciences

PO (Program Outcome)

The students of Agriculture and Soil Sciences study the following courses.

1. The students studies basics of Agronomy that includes the study of crops and the soils in which they grow. Metrology branch concern them with the processes and phenomena of the atmosphere, especially as a means of forecasting the weather on which agriculture relies.
2. Student studies soil science in which soil is a natural resource on the surface of the Earth including soil formation, classification and mapping; physical, chemical, biological, and fertility properties of soils; and these properties in relation to the use and management of agriculture.
3. The syllabus includes the scientific study of the physiology, structure, genetics, ecology, distribution, classification, and economic importance of plants.
4. Study of Irrigation helps to grow agricultural crops, maintain landscapes, and re-vegetative disturbed soils in dry areas and during periods of less than average rainfall.
5. Processing studies benefits students that include the transformation of **agricultural** products into **food**, or of one form of **food** into other forms. **Food processing** includes many forms of **processing foods**, from grinding grain to make raw flour to home cooking to complex industrial methods used to make convenience **foods**.
6. Pathology study is the scientific study in which student learns basics of diseases in **plants** caused by pathogens (infectious organisms) and environmental conditions (physiological factors).
7. Students must learn Kharif crops or **Autumn** crops that are domesticated plants like **rice** that are cultivated and harvested in India, Pakistan and Bangladesh during the Monsoon season, which lasts from June to November depending on the area.
8. Their syllabus also includes Rabi crops that are sown in winter and harvested in the spring in India. The kharif crops include rice, maize, sorghum, pearl millet/bajra, finger millet/ragi (cereals), arhar (pulses), soyabean, groundnut (oilseeds), cotton etc. The rabi crops include wheat, barley, oats (cereals), chickpea/gram (pulses), linseed, mustard (oilseeds) etc.
9. Weed management is important part of syllabus for removing unwanted vegetation from planting sites to favor the planted trees. Releasing more desirable species from less desirable overtopping species. Preventing invasion of herbaceous and/or woody vegetation into recreational areas and wildlife openings. Controlling vegetation along forest roads and around buildings and facilities. Eliminating poisonous plants from recreational areas.

10. Horticulture is the very important part of syllabus where students studies of growing and caring for plants, especially flowers, fruits, and vegetables.

11. The syllabus has content of plant breeding is the process of selecting plants with the most desirable qualities to produce offspring that inherit these desired traits. Students also study farm layout that measures the distance between vegetation.

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PSO (Program Specific Outcome)

Based on the detailed study of the Agriculture and Soil Sciences, Gujarat and India the students will be capable to appear for any Gram sevak exams and serve as Government Gram Sevak.

1. Students will be competent as Agripreneur to start their own business starting from sowing extended to market and product added values.
2. Students can opt job as soil Analyst, food analyst and supervisor at agri based industries.
3. Plant breeding units are always in search of plant breeders.
4. After completing the course students can prefer agri-marketing and also irrigation analyst.

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CO (Course Outcome)

AS 101 Principles of Agronomy and meteorology.	• Agro-climatic zones of India and Gujarat. • Classification of crops. • Selection of seed, sowing methods, tillage and its objectives, types and effect of tillage on soil, tillage implements and methods of harvesting. • Agricultural meteorology: Weather and climate, micro-climate, weather elements & their influence on different crops.

AS 102 Fundamentals of Soil sciences, Fertility and Management • Soil definition and concepts of Soil. • Physical properties of Soil: Soil texture, structure, density, porosity, consistency, color, temperature and their effects on fertility • Soil morphology and soil formation
AS 103 Economic botany And botany of Field Crops • Introduction to botany, its branches, its relationship with other sciences • Habit of the plant- herbs, shrubs, tree, climbers.
AS 104 Irrigation and water Management • Irrigation-Definition and objectives. • Water resources and irrigate on development in Gujarat. • Different methods of irrigation • Micro-irrigation techniques • Quality of irrigation water • Water harvesting techniques
AS 201 Soil Fertility and Nutrient management • Soil fertility and productivity • Fertilizers-classification of fertilizers with nutrient content • Time and methods of manures and fertilizers application
AS 202 Food Processing Technology • Food Science and Technology • Definition - Food science, Food technology and their sub discipline, difference between Food Science and Technology • Status of food processing industry in India and abroad
AS 203 Fundamentals of Plant pathology • History of plant pathology and nemetology. • Introduction, to important plant pathogenic organisms, different groups.
AS 204 Agronomy of Field Crops - I(Rabi crops) • Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices. • Cereals: wheat, barley; Pulses: chickpea, lentil,

peas, French bean; Oilseeds: rape seed and mustard, safflower and linseed; Sugar crops: sugarcane and sugar beet, Commercial crops: potato, chicory and tobacco. • Spices-Cumin, coriander, dil seed and ajwain (ajman). • Forage crops: berseem, Lucerne, Japanese mustard and oat.
AS 301 Weed management • Weeds-definition and terminology, classification, losses cause, utilization, crop-weed association, crop-weed competition, critical period of weed competition. • Methods of weed control-physical, cultural, chemical and biological.
AS 302 Farm Layout, Development management and field plot technique. • Surveying: survey equipment, methods of calculation of reduced levels, types of levelling and contouring. • Farm power and mechanization. Engine terminology and related numerical. • Energy source-introduction, classification, energy from biomass.
AS 303 Plant disease and their management • Identification of plant disease and their management • Significance of plant disease management • Principles of plant diseases management • Methods of plant diseases management
AS 304 Agronomy of Field Crops – II (Kharif crops) • Name of the crop, its synonym, botanical name and family. • Origin, geographic distribution, economic importance, soil and climatic requirement. • Main and sub main research stations, Cereals– rice (kharif summer), maize, sorghum, pearl millet and minor millets; Pulses: pigeon pea, mung bean, urad bean and horse gram; Oilseeds: groundnut. Sesame, niger and soybean. • Fibre crops: cotton, jute and sun hemp. Commercial crop- Bidi and tobacco.

AS-401 Integrated Pest Manangement

- Introduction to agriculture pests, their type and their classification, Basics of entomology.
- Biology nature of damage and management of insect pests of major field crops.
- Pest of castor, cotton, tomato, cumin and common crops of Gujarat.

AS-402 Applied Horticulture

- Principles of horticulture, definition, branches of horticulture and role of fruits and vegetables in human diet.
- Scope, current situation and importance of horticulture in India, Propagation of horticultural crops, definition, types, classification, merits and demerit
- Importance's of plant growth hormones in horticulture crops
- Nursery Management

AS-403 Organic Farming, Greenhouse and poly-house technology

- Organic farming – Definition, relevance, biological nutrient management
- Organic Manures, vermin compost, green manure, organic residue, biofertilizer soil amendments
- Integrated pest and weed management – use of bio control agents, bio pesticides etc.
- Organic certification in brief.

AS-404 Principles of plant breeding.

- Aims and objectives of Plant Breeding
- Modes of reproduction, Sexual, Asexual, Apomixes and their classification, significance in plant breeding.