

Pool of DSE

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-7 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant resource Utilization (DSE-7)	4	2		2	Class XII pass with Biology and chemistry, as one of the papers in Class XII	NA

Learning Objectives:

- To make the students familiar with the economic importance of diverse plants that offer resources to human life.
- It emphasizes the plants used as- food for man, fodder for cattle, feed for poultry, plants having medicinal value and also plant source of huge economic value etc.
- After studying Economic Botany, students would have first-hand information of plants used as food and the various kinds of nutrients available in the plants. The dietary requirements of proteins, fats, amino-acids, vitamins etc that can be met by plants.
- They will also learn about the use of fibre plants, beverages, oil yielding and medicinal plants that are integral to day to day life .

Learning Outcomes:

On successful completion of the course, a student will:

- Know about the concept of origin of cultivated plants
- Gain an understanding of morphology, processing and economic value of plant sources of cereals, legumes, spices, oil, beverages, medicines etc.
- Gain an insight into the importance of medicinal plants and their therapeutic properties
- Understand the extraction of essential oils and their commercial applications.
- Learn to perform the micro-chemical tests to demonstrate various components present in economically important plants.

SYLLABUS FOR DSE-7

Course Contents - Theory

UNIT 1: Origin of Cultivated Plants

No. of hours: 3

Cultivated Plants: origin and importance with particular reference to the works of A. de Candolle and Vavilov (especially centers of diversity, primary and secondary centers). Major plant introductions.

UNIT 2: Cereals and Legumes

No. of hours: 6

Cereals- General account and Importance of cereals with special reference to Wheat (origin, evolution, morphology & uses); Legumes- General account, Importance of legumes to man and ecosystem with special reference to Gram and Soybean (origin, morphology & uses).

UNIT 3: Spices and Beverages

No. of hours: 8

Spices: General account with special reference to clove, turmeric and black pepper (Botanical name, family, part used, morphology and uses)

Beverages: General account with special reference to non-alcoholic beverages. Tea (morphology, processing, uses)

UNIT 4: Oils and Fats (Edible, Non-edible and Essential)

No. of hours: 6

General description and classification; extraction of Edible and essential oils; uses and health implications; Groundnut, Mustard (Botanical name, family, morphology of the part used & uses). Adulteration of edible oils. Dropsy disease.

UNIT 5: Drug Yielding Plants

No. of hours: 4

Therapeutic and habit-forming drugs with special reference to *Cinchona*, *Digitalis*, *Papaver* and *Cannabis*.

UNIT 6: Fibres

No. of hours: 3

Classification based on the origin of fibres; Cotton (origin of tetraploid cotton, morphology, processing and uses).

PRACTICAL

Credits: 2

Total Hours: 60

1. Cereals: Wheat (habit sketch, L.S./T.S. grain, micro-chemical tests)
2. Legumes: Soybean, Groundnut (habit sketch, fruit, seed structure, micro-chemical tests).
3. Spices: Black pepper, Fennel and Clove (habit sketch and sections L.S./T.S.).

4. Beverages: Tea (plant specimen, sectioning of tea leaves) Coffee (Plant specimen and fruits)
5. Oils and fats: Groundnut- plant specimen, habit sketch, micro-chemical tests
6. Drug-yielding plants: Specimens of *Cinchona*, *Digitalis*, *Papaver* and *Cannabis*.
7. Fiber-yielding plants: Cotton (specimen, whole mount of fiber and micro-chemical test), jute (specimen, whole mount of fibre and micro-chemical test)
8. Essential oil-yielding plants: Habit sketch of *Rosa*, *Vetiveria*, *Santalum* and *Eucalyptus* (specimens/photographs).
9. Dye yielding plants: Any two (*Indigofera*/*Henna*/*Bixa*/*Butea*)
10. Report on study of Industrially important plants (specimens/products)- morphology, botany and uses.

3.1 Essential readings:

1. Kochhar, S.L. (2012). *Economic Botany in Tropics*. New Delhi, India: MacMillan & Co.
2. Wickens, G.E. (2001). *Economic Botany: Principles & Practices*. The Netherlands: Kluwer Academic Publishers.