B.Sc. Forensic Science: Semester-IV FST 407: Botany- IV	
Teaching Scheme	**Examination Scheme**
Lectures: 3 hrs/Week	Class Test -12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 marks

Course outcomes:

he student at the completion of the course will be able to:

- Understand the principles of genetic engineering, how genes can be cloned in bacteria and the various technologies involved in it.
- Know the applications of biotechnology in various fields like agriculture, industry and human health.
- To have an in depth understanding about Immune System & its mechanisms.
- Get introduced to DNA testing and utility of genetic engineering in forensic sciences.
- Get introduced to computers and use of bioinformatics tools.
- Enable students to get employment in pathology/Hospital.
- Take up research in biological sciences.

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Unit I – Origin and domestication of cultivated plants

- Centers of diversity of plants, origin of crop plants. Domestication and introduction of crop plants. Concepts of sustainable development; cultivation, production and uses of Cereals, legumes, Spices & beverages.
- **Botany of oils, Fibers, timber yielding plants & dyes**
  Study of the plants with Botanical names, Family, part used, and economic uses yielding Edible & essential oils; Sugar , Starch; Fibers; Paper, Fumitories & Masticatories, Rubber ,Dyes, Timber, biofuel crops

Unit II – Commercial production of Flowers, Vegetables, and fruits

- Commercial greenhouse cultivation of rose, Gerbera, Gladiolus, Anthurium/lilium/lily, tomato, bell pepper, cucumber, strawberry & Exotic leafy vegetables using Hydroponics.

Unit III – Medicinal aspects

- Study of common plants used by tribes (*Aegle marmelos, Ficus religiosa, Cynadon dactylon, Eclipta alba, Oxalis, Ocimum sanctum* and *Trichopus zeylanicus*) Ethnobotanical aspect of conservation and management of plant resources, Preservation of primeval forests in the form of sacred groves of individual species and Botanical uses depicted in our epics. Plants in primary health care: common medicinal plants: Tinospora, Acorus, Ocimum, Turmeric and Aloe..Indian Pharmacopeia, Quality Evaluation of crude drugs & adulteration

Unit IV – Pharmacognosy

- Preparation of drugs for commercial market - Organoleptic evaluation of drugs – Microscopic evaluation of drugs - Physical evaluation of drugs - Active and inert constituents of drugs – Classification of drug plants - individual drugs - drug adulteration. Sources of crude drugs – roots, rhizome, bulb, corm, leaves, stems, flowers, fruits and seeds ; organoleptic study of *Adhatoda vasica, Andrographis paniculata, Azadirachta indica, Coriandrum sativum, Datura metal, Eclipta alba, Emblica officinalis, Ocimum sanctum, Phyllanthus amarus, Ricinus communis, Vinca rosea* and *Zingiber officinale.*

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Unit V Herbal Preparations & Phytochemistry

- Collection of wild herbs · Capsules · compresses · Elixirs · Glycerites · Hydrotherapy or Herbal bath · Herbal oils · Liquid extracts or Tincture · Poultices · Salves · Slippery elm slurry and gruel · Suppositories · Teas · Plant natural products , general detection, extraction and characterization procedures. Glycosides and Flavonoids and therapeutic applications. Anthocyanins and Coumarins and therapeutic applications. Lignans, Terpenes, Volatile oils and Saponins, Carotenoids and Alkaloids Carotenoids and pharmacological activities

uggested Readings:

1. Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
2. Sambamurthy, AVSS & Subrahmanyam, NS (2000). Economic Botany of Crop Plants. Asiatech Publishers New Delhi
3. Singh, D.K. and K.V. Peter. 2014. Protected cultivation of horticultural crops. New India Publishing Agency, India
4. Reddy P. Parvatha. 2016. Sustainable crop protection under protected cultivation. Springer, Singapore.
5. Amit Deogirikar. 2019. A Text Book on Protected Cultivation and Secondary Agriculture. Rajlaxmi Prakashan, Aurangabad, India
6. Singh, B., B. Singh, N. Sabir and M Hasan. 2014. Advances in protected cultivation. New India Publishing Agency, India

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