

SYLLABUS

U.P. State Universities (B.Sc. Part-II, Semester-IV)

ECONOMIC BOTANY, ETHNOMEDICINE AND PHYTOCHEMISTRY

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

Unit II : 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 III : Commercial production of Flowers, Vegetables, and fruits (To be Chosen area wise)

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

Unit IV : IPR & Traditional Knowledge

IPR and WTO (TRIPS, WIPO), Patent Act 1970 and its amendments, TIFAC, NRDC, Rights, Procedure of obtaining patents, Working of patents, Infringement, Copyrights, Trademarks, Geographical Indications, Traditional Knowledge Digital Library, Protection of Traditional Knowledge & Protection of Plant Varieties and Biotech inventions.

Unit V : Ethnobotany

Methodologies of ethnobotanical research: Field work, Literature, Herbaria and Musea and other aspects of ethnobotany. Importance of ethnobotany in Indian systems of medicine (Siddha, Ayurveda and Unani), Role of AYUSH, NMPB, CIMAP and CARI.

Tribal knowledge towards disease diagnosis, treatment, medicinal plants, plant conservation and cultivation.

Unit VI : Medicinal aspects

Study of common plants used by tribes (*Aegle marmelos*, *Ficus religiosa*, *Emblica officinalis*, *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 VII : 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 metel*, *Eclipta alba*, *Emblica officinalis*, *Ocimum sanctum*, *Phyllanthus amarus*, *Ricinus communis*, *Vinca rosea* and *Zingiber officinale*.

Unit VIII : 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, Alkaloids and pharmacological activities.

