

POOL OF DISCIPLINE SPECIFIC ELECTIVES (DSEs)

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-1 :

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Medicinal And Ethnobotany (BS-DSE-1)	4	2	0	2	Class XII pass with Biology and chemistry, as one of the papers in Class XII	NA

Learning Objectives:

Plants are imperative to mankind with almost all plants known to possess medicinal values. There is an increased emphasis on indigenous system of medicine which has lent prime focus on medicinal plants. Keeping the therapeutic importance of medicinal plants in mind this course is designed to provide education and training on diverse perspectives of medicinal plants. The course also offers comprehensive knowledge about understanding the difference between ancient wisdom and the modern system of medicine.

Learning Outcomes:

On successful completion of the course, a student will:

- Be able to identify the common medicinal plants in their vicinity.
- Learn about the traditional healing sciences namely Ayurveda, Siddha and Unani, which have been used since the ancient times.
- Appreciate the importance of conservation strategies for medicinal plants.
- Be able to understand the importance of medicinal plants, significance of ethnobotany, role of ethnic groups in the conservation of medicinal plants.

Course Contents - Theory

Unit 1: History, Scope and Importance of Medicinal Plants

10 Hours

Introduction to indigenous systems of medicines- Ayurveda, Unani and Siddha

system of medicine)- Ayurveda: History, origin, Panchamahabhutas, Saptadhatu and Tridosha concepts, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system. Unani: History, concept: Umoor-e- tabiya. Plants used in Ayurveda, Siddha and Unani medicine with special reference to *Carum carvi*, *Plantago ovata*, *Allium sativum*, *Asparagus racemosus*, *Vitis vinifera*, *Linum usitatissimum*, *Amaranthus paniculatus*. Polyherbal formulations (with special reference to Safi, Chyawanprash, Trifala, Swalin, Amukkara Choorna, Gandhak rasayana). Natural products – Compounds responsible for biological activity of medicinal plants: their biology, and pharmacology (*Curcumin*, *Vinblastine*, *Vincristine*, *Ecliptine*, *Cinchonine*, *Azadirachtin*, *Artemisinin*).

Unit 2: Conservation of Endangered and Endemic Medicinal Plants

08 Hours

Definition: endemic and endangered medicinal plants, Red list criteria; In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanical Gardens, herbal gardens, Ethnomedicinal plant gardens. Germplasm conservation, cryopreservation (Cryo banks and DNA banks), Role of NBPGRI and JNTBGRI in conservation of plants, Propagation of Medicinal Plants: *In vitro* and *In vivo* strategies. Adulteration of Herbal drugs. Organoleptic, microscopic and phytochemical evaluation of plant drugs.

Unit 3: Ethnobotany and Folk Medicines

12 Hours

Introduction, concept, scope and objectives; Ethnobotany in India: Methods to study ethnobotany; Folk medicines of ethnobotany, Role of ethnobotany in modern medicine with special reference to *Rauvolfia serpentina*, *Trichopus zeylanicus*, *Artemisia*, *Withania*. Major and minor ethnic groups of India and their lifestyles. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, blood pressure and skin diseases. Role of ethnic groups in conservation of plant genetic resources; Brief account of biopiracy and IPR.

PRACTICAL

**Credit: 2
Hours**

Total 60

1. Identification of any ten common medicinal plants in the surrounding area and study their characteristic features.
2. Collection, identification and preparation of herbarium of any five medicinal plants.
3. Extraction and qualitative estimation of active principle compounds (alkaloids, tanins, saponins and flavanoids) from any four medicinal plants. (*Aloe vera*, *Ocimum*, *Azadirachta*, *Catharanthus*, *Adhatoda*, *Withania*)
4. Study of components and medicinal uses of common polyherbal formulations used in the traditional system of medicine (Ayurveda, Unani and Siddha).
5. Study of organoleptic, macroscopic and microscopic parameters of any two medicinal plants.
6. To compare the total phenolic content of few locally available medicinal plants

7. Field trip: Industries/Institutes/herbal garden/ medicinal gardens/ nurseries/tribal museum.
8. e-presentations (System of medicine, Conservation strategies, propagation of medicinal plants, folk medicines, application of natural products to certain diseases listed in the syllabus)

Essential readings:

1. Abdin, M. Z. and Abrol, Y. P., (2006). *Traditional Systems of Medicine*. Narosa Publishing House, New Delhi.
2. Kumar, S., (2018). *Ethnobotany*. Kojo press, New Delhi.
3. Purohit and Vyas, (2008). *Medicinal Plant Cultivation: A Scientific Approach*, Agrobios.
4. Trivedi, P. C. (2006). *Medicinal Plants: Ethnobotanical Approach*. Agrobios.

Additional Readings

1. Colton, C. M., (1997). *Ethnobotany: Principles and Applications*. John Wiley and Sons.
2. Jain, S. K., (1990). *Contributions to Indian Ethnobotany*. Scientific publishers, Jodhpur.
3. Jain, S. K., (1995). *Manual of Ethnobotany*. Scientific Publishers, Jodhpur.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE –DSE-2

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

Learning Objectives:

The course is designed to enable the students to understand and appreciate the delicate network and balance of hormones required for the healthy functioning of the human body. The course emphasizes on studying the different types of hormones along with their physiological action.