"समानो मन्त्र समिति समानी"

UNIVERSITY OF NORTH BENGAL

PROPOSED COURSE STRUCTURE

FOUR YEAR UNDERGRADUATE PROGRAM (FYUGP) WITH SINGLE MAJOR

MULTIDISCIPLINARY COURSE (MDC)

PHARMACOGNOSY AND MEDICINAL PLANTS

UNDER THE NEW CURRICULUM AND CREDIT FRAMEWORK, 2022

2023

SEMESTER - IV

Course Type: Multidisciplinary (MDC)
Course Code: MDC003

Course Name: Pharmacognosy and Medicinal Plants

Credits: 3 (Theory-3)
Full Marks: 75 (Theory-60, Continuing Evaluation-10, Attendance-5)

Brief Course Description:
MDC003 deals with herbal medicines, pharmacognosy, medicinal plants and their uses. The course will also delineate information about the enormous diversity of secondary metabolites present in plant systems. There will introduction to the concept of ethnobotany and its significance to mankind.

Prerequisite(s) and/or Note(s):
(1) High School Biology.
(2) Note(s): Syllabus may be modified after and not during the term itself, depending on the circumstances. However, students will be evaluated only on the basis of topics covered in the course.

Course Objectives:

Knowledge acquired:
(1) Medicinal plants and their importance
(2) Concept of herbal drugs
(3) Ethnobotanical knowledge

Skills gained:
(1) Learn about pharmacognosy in the modern era
(2) Understand analytical techniques of separation of compounds

Competency Developed:
(1) Distinguish between different secondary metabolites of plants
(2) Identification of medicinal plants, botanical gardens and conservation techniques

THEORY

Total Lectures: 45

Unit 1: Pharmacognosy and herbal medicines 10

Pharmacognosy and its importance in modern medicine; Herbal medicine; Crude drugs, Classification of drugs and their uses; Medicinal uses of the following herbs in curing various ailments - Tulsi, Ginger, Fenugreek, Indian Gooseberry, Ashoka, Sarpgandha, Neem, Clove, Aloe vera, Kalmegh; Role of medicinal plants in Siddha systems of medicine.

Unit 2: Drug adulteration 2

Drug adulteration - types, Methods of drug evaluation - organoleptic, microscopic, chemical, physical and biological.

Unit 3: Secondary metabolites 13

Definition of secondary metabolites and difference with primary metabolites, Basic outline of secondary metabolites biosynthesis - Phenylpropanoid pathway, Shikimate pathway, mevalonate pathway; Phytochemical screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds). Identification and utilization of the medicinal herbs - *Catharanthus roseus* (cardiotonic), *Withania somnifera* (drugs acting on nervous system), *Clerodendron phlomoides* (anti-rheumatic) and *Centella asiatica* (memory booster).

Unit 4: Ethnobotany and Folk medicines 10

Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany. Folk medicines, ethnomedicine, ethnoecology, and ethnic communities of India. Application of natural products to certain diseases - Jaundice, cardiac, infertility, diabetes, Blood pressure and skin diseases.

Unit 5: Conservation of endangered and endemic medicinal plants 10

Definition: endemic and endangered medicinal plants, Red list criteria, In situ conservation: Biosphere reserves, sacred groves, National Parks; Ex situ conservation: Botanical Gardens, Ethnomedicinal plant Gardens. Medicinal plant banks, micro-propagation of important species (*Withania somnifera*, neem and tulsi; Herbal foods-future of pharmacognosy).