



Course Syllabus
Gyanmanjari Pharmacy College
Semester-I (B. Pharm)

Subject: Introduction to Pharmacognosy (BPHBP11355)

Type of course: Major

Prerequisite:

- Basic knowledge of Biology (Plant Science) studied at the higher secondary (10+2) level.
- Fundamental understanding of Chemistry and basic scientific terminology.
- No prior knowledge of Pharmacognosy is required.

Rationale:

The course **Introduction to Pharmacognosy** provides the foundation for understanding medicinal plants and natural drugs, which form an integral part of pharmaceutical sciences. It introduces students to the history, scope, and significance of Pharmacognosy, including the identification, classification, cultivation, collection, processing, evaluation, and preservation of crude drugs obtained from natural sources. The course also familiarizes students with basic plant morphology, taxonomy, microscopy, and phytochemical concepts essential for the quality assessment and standardization of herbal drugs. This foundational knowledge enables students to appreciate the role of natural products in healthcare and prepares them for advanced courses in Pharmacognosy, Phytochemistry, Herbal Drug Technology, and related pharmaceutical disciplines.

Teaching and Examination Scheme:

Suggested Specification table with Marks (Theory):75

Course Code	Course Title			Course Type
BPHBP11355	Introduction to Pharmacognosy (Theory)			Core
Credit	Hours Per Week (L-T-P)			Max. Hours
	L	T	P	
3	3	--	--	45
Maximum Marks	MSE			ESE
75	30			45

Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

COURSE OBJECTIVES:

The objectives of this course are to:

1. Explain the origin, history, and classification of natural drugs.

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2. Understand cultivation and conservation methods for medicinal plants.
3. Study quality control and evaluation of crude drugs.
4. Study primary and secondary metabolites with their therapeutic relevance
5. Introduce traditional systems of medicine and phyto-therapeutic agents.

Course Outcomes (CO):

CO No.	Upon successful completion of this course, the students will be able to:
1	Describe the historical development, classification, and scope of Pharmacognosy.
2	Explain cultivation, processing, and conservation techniques for medicinal plants.
3	Apply quality evaluation methods to crude drugs using organoleptic, microscopic, and chemical parameters.
4	Identify primary and secondary metabolites with their therapeutic relevance.
5	Recognize traditional systems of medicine and commonly used phyto-therapeutic agents.

Course Content:

Unit No.	Topics	No. of Lectures
I	Fundamentals of Pharmacognosy (a) Definition, history, present status, scope and development of pharmacognosy. (b) Sources of drugs: Plants, animals, microbial, marine, mineral and plant tissue culture. (c) Historical milestones in drug discovery: Morphine, quinine, aspirin, warfarin, penicillin, cephalosporin, taxol and artemisinin. (d) Introduction to different herbal / traditional pharmacopoeias: Indian Pharmacopoeia, British Herbal Pharmacopoeia, United States Pharmacopoeia – Herbal Medicines and Dietary Supplements, Ayurvedic Pharmacopoeia of India, Unani Pharmacopoeia of India and American Herbal Pharmacopoeia. (e) Official and non-official; codified and non-codified drugs. Classification of crude drugs: alphabetical, morphological, taxonomical, chemical, pharmacological and chemotaxonomic classification along with their merits and limitations.	10 hours
II	Cultivation, Collection, Processing and Storage of Drugs of Natural Origin Methods of plant cultivation and Good Agricultural and Collection Practices (WHO / GAP / GCP guidelines) for medicinal plants. Factors influencing cultivation, collection and storage of medicinal plants. Plant hormones and their applications in cultivation of medicinal plants. Application of polyploidy, mutation and hybridization concepts with reference to secondary metabolites. Ex-situ and in-situ conservation and strategies for value addition of medicinal plants. Role of eco-pharmacognosy in sustainable conservation of endangered medicinal plants such as kutki and chirata.	8 hours

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III	Quality Control of Drugs of Natural Origin (WHO Guidelines) Adulteration of drugs of natural origin. Evaluation of drugs using organoleptic, microscopic (qualitative and quantitative), physical, chemical and biological methods. Physicochemical parameters: extractive values, moisture content, foreign organic matter, ash values, bitterness value, foaming index, haemolytic potential, swelling index, viscosity, optical rotation, refractive index, acid value and saponification value. DNA barcoding.	8 hours
IV	Introduction to Metabolites of Plant Origin Definition and general properties of plant metabolites. Primary and secondary metabolites such as carbohydrates, proteins, lipids, alkaloids, glycosides, flavonoids, tannins, terpenoids, volatile oils and resins. Traditional Systems of Medicine Basic principles of treatment of diseases in different systems of medicine including AYUSH and TCM. Types of dosage forms in AYUSH medicines. Role of pharmacognosy in allopathy and traditional systems of medicine such as AYUSH and TCM.	12 hours
V	Phyto-therapeutic Agents Biological source, major constituents and uses of the following classes of drugs: • Adaptogens and Immunomodulators: Ashwagandha, Tulsi, Amla • Hepatoprotectives: Milk thistle, Kutki • Cardiovascular drugs: Garlic, Arjuna • Antidiabetics: Gymnema, Fenugreek • Anti-inflammatory and analgesics: Turmeric, Boswellia • CNS drugs: Brahmi • Antimicrobial and antivirals: Giloy, Neem, Andrographis • Gastrointestinal drugs: Psyllium • Dermatological agents: Aloe • Drugs used in women's health: Chasteberry, Shatavari • Respiratory drugs: Vasaka	7 hours
Recommended References (Preferably latest editions): 1. Evans, W.C., <i>Trease and Evans Pharmacognosy</i> . 16th ed. London: W.B. Saunders & Co., 2009. 2. Tyler, V.E., Brady, L.R. and Robbers, J.E., <i>Pharmacognosy</i> . 9th ed. Philadelphia: Lea & Febiger, 1988. 3. Wallis, T.E., <i>Textbook of Pharmacognosy</i> . London: J. & A. Churchill Ltd. 4. World Health Organization (2002) <i>WHO traditional medicine strategy 2002–2005</i> . Geneva: World Health Organization 5. World Health Organization (1998) <i>Quality control methods for medicinal plant materials</i> . Geneva: World Health Organization. 6. World Health Organization (2003) <i>WHO guidelines on good agricultural and collection</i> .		



Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	Assignment/Tutorial: Faculty will provide different Topic-based technical write-ups covering the origin, history, classification systems, and dosage forms of natural drugs and student will prepare a written assignment on a pharmacognosy-related topic. Assignments should be submitted in GMIU portal	10
2	Presentation-Activity Faculty will provide topics based on cultivation technologies, quality assurance, plant metabolites, and AYUSH systems and Students will participate in short presentation making based on the given themes. Assignments should be submitted in GMIU portal	05
Total		15

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analysis (N)	Evaluation (E)	Creation (C)
Weightage	20%	45%	25%	05%	05%	--

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



**Subject: Introduction to Pharmacognosy
(Practical)
Code: - BPHBP11355**

Course Code	Course Title		Course Type
BPHBP11355	Introduction to Pharmacognosy (Practical)		Core
Credit	Hours Per Week (L-T-P)		Max. Hours
	L	T P	
1	--	-- 3	45
Maximum Marks	SE		ESE
50	20		30

Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Outcomes (CO):

CO No.	Upon successful completion of this course, the students will be able to:
1	Identify medicinal plants and crude drugs using morphological and microscopical characters.
2	Analyze powdered drugs microscopically to identify diagnostic cell contents.
3	Perform quantitative microscopy for stomatal and vein parameters.
4	Evaluate quality and purity of crude drugs using physicochemical parameters.
5	Collect medicinal plants and prepare voucher specimens during field visits.

Course Content:

List of practices
<i>(Minimum 12 experiments must be performed)</i>
1. Morphological study of medicinal plants (as mentioned in Unit V Theory).
2. Organoleptic evaluation and powder microscopical characters of the following drugs: Tulsi and Ashwagandha.
3. Organoleptic evaluation and powder microscopical characters of the following drugs: Amla and Arjuna.
4. Organoleptic evaluation and powder microscopical characters of the following drugs: Turmeric and Psyllium husk.



5. Organoleptic evaluation and powder microscopical characters of the following drugs: Brahmi and Fenugreek.
6. Determination of moisture content of crude drugs.
7. Determination of swelling index and foaming index of crude drugs.
8. Determination of stomatal number and stomatal index of leaf.
9. Determination of vein islet and vein termination number of leaf.
10. Determination of ash value and extractive values of crude drugs.
11. Determination of foreign organic matter of crude drugs.
12. Determination of dimensions of calcium oxalate crystals and phloem fibers by eyepiece micrometry.
13. Determination of dimensions of starch grains by eyepiece micrometer.
14. Experiential learning-based experiments involving collection, identification of medicinal plant material, preparation of voucher specimens and excursion visits to medicinal plant garden.

Recommended References (Preferably Latest Editions):

1. Evans, W.C., 2009. *Trease and Evans Pharmacognosy*. 16th ed. London: W.B. Saunders & Co.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., 1988. *Pharmacognosy*. 9th ed. Philadelphia: Lea & Febiger.
3. Wallis, T.E., *Textbook of Pharmacognosy*. London: J. & A. Churchill Ltd.

