



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Pharmacy College
Semester-3(B.Pharm.)

Subject: Pharmacognosy and Phytochemistry- I (BPHBP13313)

Type of course: Major

Prerequisite: NA

Rationale: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
3	1	4	6	75	25	10	25	15	150

Legends: CI-Class Room 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 Content:

Chapter No.	Course content	Hrs	% Weightage
1.	<p>Introduction to Pharmacognosy:</p> <p>a) Definition, history, scope and development of Pharmacognosy</p> <p>b) Sources of Drugs – Plants, Animals, Marine & Tissue culture</p> <p>c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum - resins).</p> <p>Classification of drugs:</p> <p>a) Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and serotaxonomical classification of drugs</p> <p>Quality control of Drugs of Natural Origin:</p> <p>a) Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological</p>	10	22



	<p>methods and properties.</p> <p>b) Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.</p>		
2.	<p>Cultivation, Collection, Processing and storage of drugs of natural origin:</p> <p>a) Cultivation and Collection of drugs of natural origin</p> <p>b) Factors influencing cultivation of medicinal plants. Plant hormones and their applications.</p> <p>c) Polyploidy, mutation and hybridization with reference to medicinal plants</p> <p>Conservation of medicinal plants</p>	10	22
3.	<p>Plant tissue culture:</p> <p>Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance. Applications of plant tissue culture in pharmacognosy.</p> <p>Edible vaccines</p>	7	16
4.	<p>Pharmacognosy in various systems of medicine:</p> <ul style="list-style-type: none"> • Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine. <p>Introduction to secondary metabolites:</p> <ul style="list-style-type: none"> • Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins 	10	22
5.	<p>Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs</p> <p>Plant Products:</p> <p>Fibers - Cotton, Jute, Hemp</p> <p>Hallucinogens,</p> <p>Teratogens,</p> <p>Natural allergens</p> <p>Primary metabolites:</p> <p>General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:</p> <p>Carbohydrates: Acacia, Agar, Tragacanth, Honey</p> <p>Proteins and Enzymes: Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).</p> <p>Lipids (Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax</p> <p>Marine Drugs: Novel medicinal agents from marine sources</p>	8	18



Continuous Assessment:

(For each activity maximum-minimum range is 5 to 10 marks)

Sr. No	Active Learning Activities	Marks
1.	Herbarium Preparation (Project): Faculty will provide name of specimen and student should collect plant, prepare herbarium sheet and present in class, submit and upload photograph of the same on GMIU Web portal.	10
2.	Think – Pair – Share Faculty will provide name of crude drugs and students have to discuss and write about classification and adulterated and spurious drugs for them and upload that details on GMIU Web portal.	05
Total		15

Suggested Specification table with Marks (Theory):75

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (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.

Course Outcome:

After learning the course the students should be able to:	
CO1	Apply the techniques in the cultivation and production of crude drugs.
CO2	Understand the crude drugs, their uses and chemical nature.
CO3	Carry out the microscopic and morphological evaluation of crude drugs.
CO4	Utilize pharmacognostic aspects specifically, the sources, the preparation methods and Utilization of those substances obtained from the natural sources.
CO5	Understand different types of adulteration of crude drugs.



List of Practical

Sr. No	Descriptions	Unit No	Hrs
1.	To study the microscope.	1	4
2.	Analysis of crude drugs by chemical tests: (i) Tragacanth (ii) Acacia (iii) Agar	1	4
3.	Analysis of crude drugs by chemical tests: (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil	1	4
4.	Determination of stomata number and Stomata index.	2	4
5.	Determination of vein islet and vein termination number.	2	4
6.	Determination of palisade ratio	1	4
7.	Determination of Size of Starch Grain	3	4
8.	Determination of Calcium Oxalate Crystals	3	4
9.	Determination of fiber length and width		
10.	Determination of number of starch grain by lycopodium spore method.	3	4
11.	Determination of Ash value of given sample	3	4
12.	Determination of water soluble Extractive value of ginger	4	4
13.	Determination OF alcohol soluble extractive value of ginger	3	4
14.	Determination OF moisture content of crude drug	4	4
15.	determination OF swelling and foaming index	4	4
		Total	60

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.



Reference Books: (Latest Editions)

- [1] W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Saunders & Co.,
- [2] London, 2009.
- [3] Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn. Lea and Febiger, Philadelphia, 1988.
- [4] Text Book of Pharmacognosy by T.E. Wallis
- [5] Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
- [6] Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
- [7] Herbal drug industry by R.D. Choudhary (1996), 1st Edn, Eastern Publisher, New Delhi.
- [8] Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
- [9] Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
- [10] Anatomy of Crude Drugs-by M.A. Iyengar

