



Program	Bachelor of Pharmacy (BPharm)	Semester - 4
Type of Course	-	
Prerequisite		
Course Objective	-	
Effective From A.Y.	2023-24	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				External Marks (T)	Internal Marks (T)	External Marks (P)	Internal Marks (P)	
3	1	4	6	75	25	35	15	150

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	UNIT 1 1. Introduction to Pharmacognosy: (a) Definition, history, scope and development of Pharmacognosy (b) Sources of Drugs – Plants, Animals, Marine & Tissue culture (c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum - resins). 2. Classification of drugs: Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs 3. Quality control of Drugs of Natural Origin: Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties. Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.	10	22
2	UNIT 2 4. Cultivation, Collection, Processing and storage of drugs of natural origin: Cultivation and Collection of drugs of natural origin Factors influencing cultivation of medicinal plants. Plant hormones and their applications. Polyploidy, mutation and hybridization with reference to medicinal plants 5. Conservation of medicinal plants	10	22
3	UNIT 3 6. Plant tissue culture: Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance. Applications of plant tissue culture in pharmacognosy Edible vaccines	7	16
4	UNIT 4	10	22



Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
	<p>7. Pharmacognosy in various systems of medicine: Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.</p> <p>8. Introduction to secondary metabolites: Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins.</p>		
5	<p>UNIT 5</p> <p>9. Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs</p> <p>10. Plant Products: Fibers - Cotton, Jute, Hemp Hallucinogens, Teratogens, Natural allergens</p> <p>11. Primary metabolites: 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>12. Carbohydrates: Acacia, Agar, Tragacanth, Honey</p> <p>13. Proteins and Enzymes: Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).</p> <p>14. Lipids (Waxes, fats, fixed oils): Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax</p> <p>15. Marine Drugs: Novel medicinal agents from marine source</p>	8	18
		Total	45 100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Evaluate
Weightage	45	30	10	5	10

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

Course Outcomes

At the end of this course, students will be able to:

C01	Understanding of techniques in cultivation and production of crude drugs
C02	Knowledge and skills on various quality control parameter for evaluation of crude drugs
C03	Understanding of alternative medicinal system and role of secondary plant metabolites
C04	Knowledge and understanding of primary plant metabolites
C05	Knowledge and skills to evaluate various crude drug by physical and microscopical techniques.



Reference Books

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

List of Practical

1.	To Determine swelling index of given sample.
2.	To determine foaming index of given sample.
3.	To determine average diameter of given starch sample.
4.	To determine diameter of given starch sample.
5.	To determine the length & width of given fibre center.
6.	To determine the size of calcium oxalate crystal for given sample.
7.	To determine stomatal number & index of given sample.
8.	To determine vein islet & vein termination number of Indian senna leaf.
9.	To determine the palisade ratio of given sample.
10.	To determine extraction value of given crude drug.
11.	To determine moisture content of given crude drug sample.
12.	To determine Ash value of given crude drug sample.
13.	To perform chemical test for carbohydrates.
14.	To perform chemical test of protein & lipid.
15.	Demonstration of lycopodium spore method.



List of Tutorial

1.	Tutorial-1
2.	Tutorial-2
3.	Tutorial-3
4.	Tutorial-4
5.	Tutorial-5
6.	Tutorial-6
7.	Tutorial-7
8.	Tutorial-8
9.	Tutorial-9
10.	Tutorial-10
11.	Tutorial-11
12.	Tutorial-12
13.	Tutorial-13
14.	Tutorial-14
15.	Tutorial-15