TEACHING PLAN: PHARMACOGNOSY & PHYTOCHEMISTRY-I

SCHOOL: (SOP) SCHOOL OF PHARMACY	ACADEMIC SESSION: 2024– 2025	FOR STUDENTS': B. Pharmacy Semester-IVth Semester

1	**Course No.**	BP 405T
2	**Course Title**	**Pharmacognosy and Phytochemistry-I**
3	**Credits**	**4**
4	**Learning Hours**	Contact Hours 45
5	**Course Objective**	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.
6	**Course Outcomes**	Upon completion of the course, the student shall be able 1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents 2. to understand the preparation and development of herbal formulation. 3. to understand the herbal drug interactions 4. to carryout isolation and identification of phytoconstituents
7	**Outline syllabus:**	

7.01	Paper Code	Unit	Introduction	Page Numbers[1]	Lectures
7.02	BP 405T Unit I	(a)	**UNIT-I 10 Hours** **Introduction to Pharmacognosy:** (a) Definition, history, scope and development of Pharmacognosy	Ref.1,1.1-1.5,	1
		(b)	(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture	Ref.1,1.7-1.8,	1
		(c)	(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).	Ref.1,2.4-2.24,	1
		(a)	**Classification of drugs:** Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs	Ref.1,1.9-1.16,	3
		(b)	**Quality control of Drugs of Natural Origin:** Adulteration of drugs of natural origin.	Ref.1,7.1-7.25, Notes	1

		(c)	Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.		2
		(d)	Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, Camera lucida and diagrams of microscopic objects to scale with camera lucida.	Ref.1,7.26-7.46,	1
7.05	**Unit II**	(a)	Cultivation and Collection of drugs of natural origin Factors influencing cultivation of medicinal plants.	Ref.1,3.1-3.18,	4
		(b)	Plant hormones and their applications	Ref.1,3.19-3.23	2
		(c)	Polyploidy, mutation and hybridization with reference to medicinal plants	Ref.1,5.1-5.6,	2
		(d)	Conservation of medicinal plants	Ref.1,3.27-3.28	2
7.06	**Unit III**	(a)	**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.	Ref.1,5.01-5.17,Notes ppt	4
		(b)	Nutritional requirements, growth and their maintenance.	Ref.1,3.7-3.10,	2
		(c)	Edible vaccines	Ref.1,1.1-1.5,	1
	Unit IV		**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.	Ref.1,1.6-1.8,	5
			Introduction to secondary metabolites: Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins	Ref.1,14.1-14.5,	5
	Unit V		Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs **Plant Products:** Fibers - Cotton, Jute, Hemp Hallucinogens, Teratogens, Natural allergens **Primary metabolites:** General introduction, detailed study with respect	Ref.1,16.01—16.12, 8.01-8.46	2

			to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primarymetabolites: **Carbohydrates:** Acacia, Agar, Tragacanth, Honey		2
			Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin). **Lipids(Waxes, fats, fixed oils)** : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax **Marine Drugs:** Novel medicinal agents from marine sources	Ref.1,12.01--12.28,Notes	4
8	**Course Evaluation**				
8.1	**Internal Assessment: Continuous Mode**				
8.11	**Attendance**	4 Marks			
8.12	**Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar)**	3 Marks			
8.13	**Student-Teacher Interaction**	3 Marks			
9	**Text Books & References**				
9.1	**Text book**	1. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi. 2. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005. 3. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007			
9.2	**References**	4.W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009. 5. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988. 6. Text Book of Pharmacognosy by T.E. Wallis 7. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.			
9.3	**Video References**				

QUESTION BANK

UNIT I

1. **Define Pharmacognosy, write the History and scope of Pharmacognosy.**
2. **Write short note on development of Pharmacognosy.**
3. **Write on plant, mineral and animal sources of crude drugs with suitable examples.**
4. **Describe novel drugs from marines' sources.**
5. **Define & differentiate organised and unorganised drugs.**
6. **Discuss and detail on differentiation b/w organised and unorganised drug.**
7. **Explain and detail about classification of crude drug.**
8. **Write a short note on alphabetical classification of crude drug.**

UNIT II

1. **Write any two advantage and disadvantage of cultivation of crud drug.**
2. **Explain the factor that influence the cultivation of medicinal plant.**
3. **Discuss on various fertilizer used in cultivation.**
4. **What is pest control? Write its importance.**
5. **Write in detail about plant growth regulator.**
6. **Write a note on collection of crude drug.**
7. **Write an account on harvesting of crude drug.**
8. **Write the cultivation, collection and processing of crude drug.**
9. **Write a note on polyploidy.**
10. **Write an account on storage of crude drugs.**

UNIT III

1. **Define plant tissue culture.**
2. **Explain about callus cultures.**
3. **Write the application of plant tissue culture in production of pharmaceutically important secondary metabolites.**
4. **Briefly explain the different vaccine delivery system. Write in detail on edible vaccines.**
5. **Write the short note on nutritional requirements for tissues culture.**

UNIT IV

1. **Discuss the basic principles of Ayurveda.**
2. **Explain the Homeopathic system of medicine.**
3. **Classify alkaloids. Give the properties and function of alkaloids and add a note on the general identification test for alkaloids.**
4. **Add a note on indole alkaloids.**
5. **Give a detailed account on steroidal alkaloids.**
6. **What are glycosides. Give the test for identification of glycosides.**
7. **Define tannins. Classify them with examples.**
8. **Enlist general methods of isolation of volatile oils.**
9. **What are resins? Give their types with examples.**

UNIT V

1. **Write the biological source, family and uses of cotton.**
2. **Write the chemical test for carbohydrates.**
3. **Write the source, collection process, constituents and use of acacia, tragacanth.**
4. **Give the source, collection and uses of honey.**
5. **Give the proteins? Give their classification and identification tests.**

6. **What are enzymes.**
7. **What are lipids? Give the classification with examples.**
8. **Give the biological source, collection and preparation, chemical constituents, chemical test and uses of castor oil, wool fat and bees wax.**
9. **Give the source collection and uses of papain.**
10. **Describe the development of novel drugs from marine organism.**
11. **Write a note on anticancer drugs obtain from marine sources.**

Subject Incharge

1. Dr.Manish Gunjan
2. Ms.Sarswati