FACULTY OF PHARMACY
Sixth Semester Bachelor of Pharmacy
In Effect from Academic Year 2018-19

Subject Code: 1PH1010606	**Subject Title:** PHARMACOGNOSY-IV
Pre-requisite Subject	**- NONE -**

Objectives of course:

- To make students familiar with pharmacognostic study of alkaloids containing crude drugs, enzymes, marine drugs and pharmaceutical aids.

Learning outcomes:

At the end of semester student will be able to:

- Understand the pharmacognostic aspects specifically sources, morphology, microscopy, chemical constituents, identification tests and important uses of crude drugs belongs to alkaloids.
- Know about several enzymes, marine drugs, pharmaceutical aids and their applications in pharmaceutical field.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)					
				Theory(T)		Practical(P)		Total Marks	
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Theory	Practical
3	NA	3	6	80	20	80	20	100	100

Subject Contents			
Sr. No.	**Topic**	**Total Hours**	**Weight (%)**
1	**Alkaloids:** Definition, classification, physico-chemical properties, general methods for isolation, biological sources, agronomy (cultivation, collection), processing, commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic macroscopic, microscopic features and specific chemical tests of following alkaloid containing drugs a) **Pyridine – Piperidine:** Tobacco, Lobelia, Pomegranate, Piper, Areca nut b) **Tropane:** Datura, Belladonna, Hyocyamus, Scopolia, Withania, Dubosia, Cocca c) **Quinoline & Isoquinoline:** Cinchona, Ipecac, Opium, Camptotheca d) **Indole:** Ergot, Rauwolfia, Catharanthus, Nuxvomica, Physostigma e) **Imidazole:** Pilocarpus f) **Steroidal:** Veratrum, Kurchi, Kantakari g) **Alkaloidal Amine:** Ephedra, Colchicum h) **Purines:** Coffee, Tea, Cola i) **Quinazoline:** Vasaka j) **Diterpene Alkaloids:** Aconite, Taxus k) **Others:** Tylophora	31	69
2	**Enzymes:** Biological sources, preparation, identification test and uses of Diastase, Papain, Pepsin, Trypsin, Pancreatin, Bromalein, Ficin, Penicillinase, Hyalluronidase, Streptokinase, Urokinase.	6	13
3	**Pharmaceutical Aids:** Talc, Diatomite, Fibres and Natural colours.	4	9
4	**Marine Pharmacognosy:** Novel medicinal agents from marine sources.	4	9

List of Experiments: (45 Hours)

Practical exercises should be based on theoretical topics. The practical should broadly cover the following:	
1	Study of Morphology, Microscopy and TLC of crude drugs: (T.S., Powder and TLC of underlined drugs): a. Datura, Tobacco, Pomegranate, *Piper longum, Piper nigrum* b. Withania (Root), Belladonna, Hyocyamus, Dubosia, Lobelia, Areca c. Cinchona, Ipecac, Campotheca d. Rauwolfia, Ergot e. Nuxvomica, Catharanthus, Physostigma f. Kurchi, Kantakari (Leaf & Stem) g. Ephedra, Colchicum (Seed & Corm) h. Vasaka, Coffee, Tea, Cola i. Tylophora, Aconite, Taxus
2	Study of Morphology and chemical tests of Talc, Diatomite, Fibres and Natural colour containing drugs. Microscopy of raw and absorbent Cotton, Wool, Jute, Silk and Rayon.
3	Isolation of Quinine from Cinchona.
4	Isolation of Caffeine from Tea
5	Isolation of Piperine from Black Piper.
6	Estimation of Total Alkaloids from Datura by Titrimetric method.
7	Estimation of Quinine by UV Spectroscopy.

List of References:

Reference books:

1. Cultivation and Utilization of Medicinal Plants, Atal C. K. and Kapur B. M., RRL Jammu, 1st Edition, 1989.
2. Supplement to Cultivation and Utilization of Medicinal Plants, Handa, S.S. and Kaul, M.K., 1996. RRL, CSIR Publication, Jammu Tawi.
3. Quality Standards of Indian Medicinal Plants, Volume I to XI (2003 to 2013) Editor: Neeraj Tundon & Parul Sharma; By: Medicinal plant Unit, ICMR, New Delhi.
4. Plant Drug Analysis: A Thin Layer Chromatography Atlas, H. Wagner, S Bladt, Springer, New York, 2nd Edition, 2007.
5. The Wealth of India (Raw Material & Industrial Product), Published by Council of Scientific Industrial Research, New Delhi, 1st Edition, (1950-2014).
6. Indian Medicinal Plants by Kirtikar and Basu, 1st Edition, International Book Distributors, Dehradun, 1999.
7. Microscopic profile of powdered drugs used in Indian system of medicine, Volume I, Bark drugs, Malati G Chanhan & A. P.G Pillai, Institute of Ayurvedic medicinal plant science, Gujarat ayurved unit Jamnagar, CPTA, 2005.
8. Microscopic profile of powdered drugs used in Indian systems of Medicine, Leaf Drugs, Vol 2, Malati G Chauhan & A.P.G Pillai, Institute of P.G Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, 2007.
9. Microscopic profile of Drugs used in Indian system of Medicine, Seed drugs, Volume- 3, part- 1, Malati G Chauhan & A.P.G Pillai, Publisher: Prof Malati G Chauhan, P.G T- S.F C cell, I.P. G T. & R.A, Gujarat Ayurved University, Jamnagar, 2011.

Text books:

1. Trease and Evans Pharmacognosy, William Charles Evans, W. Saunders, Edinburg London New York Philadelphia St. Louis Sydney Toronto, 16th Edition, 2009.
2. Textbook of Pharmacognosy, C. S. Shah, J. S. Quadry, B. S. Shah Prakashan, Ahmadabad, 15th Edition, 2009.
3. Textbook of Pharmacognosy, T. E. Wallis, CBS Publishers and Distributors, New Delhi, 5th Edition, reprinted, 2009.

4. Pharmacognosy, C. K. Kokate, A. P. Purohit, S. B. Gokhale, Nirali Prakashan Pune, 42nd edition, 2008.
5. Textbook of Pharmacognosy and Phytochemistry, Biren Shah, A. K. Sheth, Elsevier Publication, 1st edition, 2010.
6. Essentials of Pharmacognosy, Ansari S. H., Birla Publications Pvt. Ltd., 4th Edition, 2011.
7. Practical Pharmacognosy, Technique and Experiment by C. K. Kokate and S. B. Gokhale, Nirali Prakashan, Pune, 8th edition, 2005.
8. Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices, Betty P. Jackson, Derek W. Snowdon, CBS publishers, 1992.
9. Pharmacognosy and Pharmacobiotechnology by Ashutosh Kar, 2nd Edition, New Age International Pvt. Ltd.; New Delhi, 2007.

e- Resources:

1. http://www.epharmacognosy.com/2012/07/alkaloids.html
2. http://nsdl.niscair.res.in/jspui/bitstream/123456789/589/1/Revised%20Proteins%20containing%20Drugs.pdf
3. http://www.druginfosys.com/drug.aspx?drugcode=1259&type=1
4. http://www.allnaturaldyeing.com/natural-dye-colors
5. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/marine-pharmacognosy