FACULTY OF PHARMACY
Fourth Semester Bachelor of Pharmacy
In Effect from Academic Year 2017-18

Subject Code: 1PH1010406	**Subject Title:** Pharmacognosy-II
Pre-requisite Subject	**- NONE -**

Objectives of course:
To make students familiar with pharmacognostic study of volatile oil, resin and tannin containing crude drugs.

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 volatile oil, resin and tannin.
- Understand general method of extraction for volatile oil, resin and tannin.

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	**Volatile Oils:** Definition, classification, physico-chemical properties, general methods for isolation, source, cultivation, collection, commercial varieties and systematic pharmacognostic study of volatile oils containing drugs • **Alcohol:** Coriander, Geranium, Sandal wood • **Esters and Alcohol:** Rose, Mentha • **Aldehyde:** Cinnamon, Cassia, Lemon peel, Orange peel, Lemon grass, Eucalyptus, Cumin • **Ketone:** Caraway, Dill • **Phenol:** Clove, Tulsi, Ajowan • **Ether:** Star Anise, Fennel, Nutmeg, Cardamom **Others:** Gaultheria, Valerian, Vaj, Vetiver, Nagarmotha, Garlic, Saffron, Vanilla	25	55
2	**Resins:** Definition, classification, physico-chemical properties, general methods for isolation, source, cultivation, collection, commercial varieties and their systematic pharmacognostic study of following drugs • **Acid resin:** Colophony • **Resin Alcohol & Phenols:** Balsam, Cannabis • **Ester Resin:** Benzoin • **Oleo gum resin:** Asafoetida, Myrrh, Guggul, Salaiguggul • **Oleo-resin:** Ginger, Turmeric • **Glyco-resin:** Kaladana, Podophyllum, Nishoth **Other:** Vidang, Capsicum	13	29
3	**Tannins:** Definition, classification, physico-chemical properties, general methods for isolation, source, cultivation, collection, commercial varieties and their systematic pharmacognostic study • **Hydrolysable:** Amla, Harde, Behda, Galls • **Condensed:** Pale catechu, Black catechu, Ashoka, Bael, Pterocarpus	7	16

List of Experiments: (45 Hours)

Practical exercises should be based on theoretical topics. The practical should broadly cover the following:	
1	Demonstration of methods for isolation of volatile oil from crude drugs.
2	Study morphology of volatile oil containing following drugs. Perform microscopy (TS and Powder) and TLC of underlined drugs. • Leaf drugs: Mentha, Eucalyptus, Lemon grass, Gaultheria, Tulsi, Geranium • Bark and Peel: Cinnamon (Ceylon and Chinese), Orange peel, Lemon peel, Star anise • Umbelliferous fruits: Fennel, Coriander, Dill, Ajowan, Caraway, Cumin • Flower drugs: Clove and Rose • Seed and wood: Cardamom, Nutmeg, Sandal wood • Rhizome: Vaj, Valerian, Nagarmoth, Garlic
3	Study morphology of tannin containing following drugs. Perform microscopy (TS and Powder) of underlined drugs. Amla, Ashoka, Pale catechu, Black catechu, Galls, Harde, Behda, Bael, Pterocarpus
4	Study morphology and chemical tests of resin containing following drugs. Perform microscopy (TS and Powder) of underlined drugs. Colophony, Balsam, Benzoin, Myrrh, Asafoetida, Guggul, Ginger, Turmeric, Vidang, Kaladana
5	Perform chemical tests for tannins.

List of References:

Reference books:

1. Trease and Evans Pharmacognosy, William Charles Evans, W. Saunders, Edinburg London New York Philadelphia St. Louis Sydney Toronto, 16th Edition, 2009.
2. Cultivation and Utilization of Aromatic Plants, Atal C. K. and Kapur B. M., RRL Jammu, 1st Edition, 1989
3. Supplement to Cultivation and Utilization of Aromatic Plants, Handa, S.S. and Kaul, M.K., 1996. RRL, CSIR Publication, Jammu Tawi
4. 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.
5. Plant Drug Analysis: A Thin Layer Chromatography Atlas, H. Wagner, S Bladt, Springer, New York, 2nd Edition, 2007.

Text books:

1. Textbook of Pharmacognosy, C. S. Shah, J. S. Quadry, B. S. Shah Prakashan, Ahmadabad, 15th Edition, 2009.
2. Textbook of Pharmacognosy, T. E. Wallis, CBS Publishers and Distributors, New Delhi, 5th Edition, reprinted, 2009.
3. Pharmacognosy, C. K. Kokate, A. P. Purohit, S. B. Gokhale, Nirali Prakashan Pune, 42nd edition, 2008.
4. Textbook of Pharmacognosy and Phytochemistry, Biren Shah, A. K. Sheth, Elsevier Publication, 1st edition, 2010.
5. Essentials of Pharmacognosy, Ansari S. H., Birla Publications Pvt. Ltd., 4th Edition, 2011.
6. Practical Pharmacognosy, Technique and Experiment by C. K. Kokate and S. B. Gokhale, Nirali Prakashan, Pune, 8th edition, 2005.
7. Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices, Betty P. Jackson, Derek W. Snowdon, CBS publishers, 1992.

e- Resources:

1. http://www.epharmacognosy.com/2012/05/volatile-oils-or-essential-oils_13.html
2. http://agritech.tnau.ac.in/horticulture/extraction_methods_natural_essential_oil.pdf
3. http://siba.unipv.it/farmacia/art/Marrubini/Nat%20Prod%20Rep%202001.pdf
4. http://www.epharmacognosy.com/2012/05/resins-and-resin-combinations.html