INSTITUTE	**FACULTY OF PHARMACY**
PROGRAM	**BACHELOR OF PHARMACY**
SEMESTER	**3**
COURSE TITLE	**PHARMACOGNOSY AND PHYTOCHEMISTRY-I**
COURSE CODE	**13PH0305**
COURSE CREDITS	**6**

Objective:

1 To study the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.
Sources and classification of drugs

2 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.

Course Outcomes: After completion of this course, student will be able to:

1 To understand the techniques in the cultivation and production of crude drugs

2 To describe the crude drugs, their uses and chemical nature

3 To explain the evaluation techniques for the herbal drugs

4 To analyse the microscopic and morphological evaluation of crude drugs

Pre-requisite of course: 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

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	1	4	75	15	10	35	15

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Contents : Unit	Topics	Contact Hours
1	**Introduction to Pharmacognosy:** (a) Definition, history, scope and development of Pharmacognosy (b) Sources of Drugs – Plants, Animals, Marine & Tissue culture Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilage, oleoresins and oleo- gum -resins). Classification of drugs: Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs 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, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.	10
2	**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 Conservation of Medicinal Plants	10
3	**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
4	**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. Introduction to secondary metabolites: Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins	10
5	**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 to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites: Carbohydrates: Acacia, Agar, Tragacanth, Honey, Starch, Sodium alginate, Pectin, Guar gum 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	8
Total Hours		**45**

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical** Experiment no.1, Experiment no.2, Experiment no.3, Experiment no.4, Experiment no.5, Experiment no.6, Experiment no.7, Experiment no.8, Experiment no.9, Experiment no.10, Experiment no. 11, Experiment no. 12, Experiment no. 13, Experiment no. 14	40
2	**Tutorial** Workshop 1, Workshop 2, Workshop 3, Workshop 4, Workshop 5, Workshop 6, Workshop 7, Workshop 8, Workshop 9, Workshop 10, Workshop 11, Workshop 12, Workshop 13, Workshop 14, Workshop 15	15
Total Hours		**55**

Textbook :

1 Textbook of Pharmacognosy, T. E. Wallis, CBS, 2005

References:

1 Trease and Evans Pharmacognosy, 16th edition, Trease and Evans Pharmacognosy, 16th edition, W.C.Evans, , W.B. Sounders & Co., , 2009

2 Pharmacognosy, 9th Edn., Pharmacognosy, 9th Edn., Tyler, V.E., Brady, L.R. and Robbers, J.E., Lea and Febiger, 1988

3 Pharmacognosy, , Pharmacognosy, , Mohammad Ali. , CBS Publishers & Distributors, 2008

4 Text book of Pharmacognosy (37th Edition), Text book of Pharmacognosy (37th Edition), C.K. Kokate, Purohit, Gokhlae. , Nirali Prakashan, 2007

5 Herbal Drug Industry Ist Edn, Herbal Drug Industry Ist Edn, R.D. Choudhary, , Eastern Publisher, 1996

6 Essentials of Pharmacognosy, IInd edition, Essentials of Pharmacognosy, IInd edition, SH.Ansari, , Birla publications, 2007

7 Practical Pharmacognosy, 5th edition, , Practical Pharmacognosy, 5th edition, , C.K. Kokate, , Vallabh Prakashan, 2016

8 Anatomy of Crude Drugs,, Anatomy of Crude Drugs,, M.A. Iyengar, , Manipal Press, 2001

9 Textbook of Pharmacognosy & Phytochemistry, 2nd edition, Textbook of Pharmacognosy & Phytochemistry, 2nd edition, Biren Shah & A. K. Seth,, Elsevier Publication, 2011

10 Practical Pharmacognosy, 9th edition, Practical Pharmacognosy, 9th edition, Khandelwal K. R. , Nirali Prakashan, 2009

11 Herbal Drug Technology, 2nd edition,, Herbal Drug Technology, 2nd edition,, Agrawal S.S., , Orient Blackswan, 2012

12 Pharmaceutical Biotechnology, 1st edition, Pharmaceutical Biotechnology, 1st edition, Vyas S. P. and Dixit V. K.,, CBS Publisher & Distributors, 2016

13 Quality Control Methods for Medicinal Plant Materials, Quality Control Methods for Medicinal Plant Materials, WHO, World Health Organisation, 1988

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
30.00	30.00	25.00	10.00	5.00	0.00

Instructional Method:

1. The course delivery method will depend upon the requirement of content and the need of students. The teacher in addition to the conventional teaching method by the blackboard may also use any tools such as demonstration, role play, quiz, brainstorming, MOOCs etc
2. The internal evaluation will be done based on continuous evaluation of students in the laboratory and classroom.
3. Students will use supplementary resources such as online videos, NPTEL videos, MOOCs/ e-courses, virtual laboratories.

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