SECOND SEMESTER 2020-21
COURSE HANDOUT

Date: 18.01.2021

In addition to part I (General Handout for all courses appended to the Time table) this portion gives further specific details regarding the course.

Course No : PHA F344
Course Title : Natural Drugs
Instructor-in-Charge : Dr. Atish T. Paul
Instructor(s) : NA
Tutorial/Practical Instructors: Pracheta Sengupta, Nisha Yadav, K. Sriravali, Reena

1. Course Description: This course is a laboratory oriented course and covers application of natural drugs for drug discovery and development

2. Scope and Objective of the Course: This course deals with study of crude drugs of natural origin, currently used in pharmacy and medicine. The study comprises of classification of crude drugs, principles of cultivation, collection, preparation for market and commerce of natural drugs, their morphological, microscopical and chemical characteristics, identification, uses and common adulterants.

3. Text Books: Trease and Evans Pharmacognosy, W.B. Saunders (Harcourt Publishers Ltd), 16thed., 2009.

4. Reference Books:

1. Tyler V.E, Brady, L.R, Robbers, J.E, Pharmacognosy, Lea & Febiger, 9thed., 2003.
2. Wallis T.E, Text book of Pharmacognosy, CBS Publishers, 5thed., 1997.

5. Course Plan:

Module Number	Lecture session/Tutorial Session	Reference	Learning Outcome
I	Origin of pharmacognosy	TB-1(1)	Student will understand basics of Introduction to Natural Drugs & nomenclature
	Scope of pharmacognosy		
	Practice of pharmacognosy		
	Plant nomenclature and taxonomy		
II	Techniques in microscopy	TB-1(9), RB-2	Student will understand basics of Microcopy, Macroscopical study of Plant Tissues and contents
	Plantdescription		
	Plantmorphology & micromorphology		
	Ergastic cell contents		
III	Basic metabolic pathways	TB-1(5)	Student will learn the concept of Phytochemistry, How natural products are biosynthesized
	Origin of secondary metabolites		
	Biological and geographical sources of drugs		
	General methods associated with the phytochemical investigation		
IV	Study on Alkaloids	TB-1(6)	Student will learn the Pharmacopoeial and related drugs of biological origin
	Study on Terpenes		
	Study on Saponins and Steroids		
	Study on Phenols and phenolic glycosides		
	Study on Cyanogenetic glycosides		
	Study of Miscellaneous class of compounds		
V	Anticancer activities of natural products	TB-1(2)	Student will learn the Plant and animal kingdoms as sources of drugs
	An overview of drugs with antihepatotoxic activities		
	An overview of drugs with oral hypoglycaemic activities		
	Nutraceuticals		
	Antibacterial activities of natural products		
	Antiprotozoal activities of natural products		
	Antiviral agents activities of natural products		

VI	Traditional plant medicines as a source of new drugs	TB-1(7) Research articles	Student will learn about the Plants used in complementary and traditional systems of medicine
	Herbal medicine in Britain and Europe: regulation and practice		
	Homoeopathic medicine and aromatherapy		
	Aspects of Asian medicine and its practice in the West		
	Herbs and Plants in Chinese and African traditional medicine		
VII	Commerce in crude drugs	TB-1(3) Research articles	Student will learn about the Commercial production, quality and standardization of natural products
	Production of crude drugs		
	Plant growth regulators		
	Plant cell and tissue culture		
	Phytochemical variation within a species		
	Quality control of herbal medicines		
VII	Hallucinogenic plants	TB-1(8), RB-1(15)	Student will learn about the non-medicinal toxic plants and pesticides
	Allergenic plants		
	Teratogenic and other toxic plants		
	Pesticides of natural origin		
IX	Synergy and Biological target interaction and identification with natural products etc.	Research articles	Student will learn about the recent advances in herbal drugs discovery

6. Evaluation Scheme:

Component	**Duration**	**Weightage (%)**	**Date & Time**	**Nature of component (Close Book/ Open Book)**
Mid-Semester Test[$]	90 min.	30	As per timetable	Close Book
Comprehensive Examination[$]	120 min	40 (10+30)	12/5 FN	Open Book/Close Book
*Continuous assessment (Laboratory and Quiz)		30 (10+20)		Open Book/Close Book

[$] *It is strongly advised that all students prepare their own class notes and relevant information from text, reference material, as in handouts would only be allowed for consultation during assessments of open book/notes. Photocopies of any material, written or printed will not be permitted. Stapled sheets, loose sheets of information written or printed, photocopies of slides used for discussion in class will not be allowed.*

***** *Continuous assessment will be based on theory covered in class and practicals. Topics and number will be announced in the class. It will be in terms of, tutorials, day to day laboratory experiments, laboratory comprehensive exam and class participation. In case of tutorials, students are supposed to attend them regularly. Surprise quiz will be a part of continuous assessment. In case of laboratory practical's students are expected to write lab records properly in addition to what is taught, refer other books, draw proper diagrams, and submit the lab records on time. Mere presence during practicals does not guarantee marks in experiments.*

Practicum experience:

Experiments	**No of practical hours**	**References/chapters**
Practical's based on morphological and microscopical features of medicinal plants, Extraction and Thin layer chromatography	As in timetable	Different chapters of text book/ practical book

7. Mid-Sem. Grading: It would be done once at least 30-40 % evaluation components are completed.
8. Chamber Consultation Hour: to be announced in class.
9. Notices: Notices concerning the course will be displayed on the Pharmacy Group N.B. only.
10. Make-up Policy: Make-Ups are not given as a routine. It is solely dependent upon the GENUINENESS OF THE CIRCUMSTANCES under which a student fails to appear in a scheduled evaluation component. In such circumstances, prior permission should be obtained from the Instructor-in-Charge. IN NO CASE THE MAKE-UP APPLICATION BE SLIPPED INSIDE THE CHAMBER OF THE INSTRUCTOR-IN-CHARGE. However, the decision of the Instructor-in-Charge in the above matter will be final.
11. Note (if any):NA

Instructor-in-charge
Course No. PHA F344