

B. PHARMACY

Syllabus ♦ Semester-8

Elective subject-8 name with code: **13PH0810 Experimental Pharmacology**

Course Objective

This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

Course Outcomes

Upon completion of the course, the student shall be able to

1. Appreciate the applications of various commonly used laboratory animals.
2. Appreciate and demonstrate the various screening methods used in preclinical research.
3. Appreciate and demonstrate the importance of biostatistics and research methodology.
4. Design and execute a research hypothesis independently.

Teaching and assessment scheme

Teaching Scheme (Hours)			Credits	Theory/ Tutorial Marks			Practical Marks		Total Marks
Theory	Tutorial	Practical		CSE	IA (I)	ESE (E)	TW	Viva (V)	
3	1	0	4	10	15	75	0	0	100

Theory syllabus

Teaching hours: 45 Hours

Unit-1

7 Hours

Laboratory animals: Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals Common lab animals: Description and applications of different species and strains of animals. Popular transgenic and mutant animals. Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection and euthanasia.

Unit-2

3 Hours

Introduction to preclinical studies: Dose selection, calculation and conversions, preparation of drug solution/suspensions, a grouping of animals and importance of sham negative and positive control groups. The rationale for the selection of animal species and sex for the study.

Unit-3

12 Hours

Preclinical screening models for drugs acting on CNS: Analgesic, antipyretic, anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, nootropics anti Parkinsonism drugs, anti-Alzheimer drug Preclinical screening models for drugs acting on the eye and local anaesthetics.

Unit-4

5 Hours

Preclinical screening models for drugs acting on ANS: Sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants.

Unit-5

13 Hours

Preclinical screening models for drugs acting on CVS: Antihypertensives, diuretics, antiarrhythmic, anti-dyslipidemic, antiaggregatory, coagulants, and anticoagulants Preclinical screening models for antiulcer, antidiabetic, anticancer and antiasthmatic activities.

Unit-6

5 Hours

Research methodology and bio-statistics: Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students't' test and One-way ANOVA. Graphical representation of data.

Tutorials will be based on the above syllabus.

Teaching hours: 15 Hours

Recommended references (Latest edition)

1. Fundamentals of Experimental Pharmacology by M. N. Ghosh.
2. Handbook of Experimental Pharmacology by S. K. Kulkarni.
3. CPCSEA guidelines for laboratory animal facility.
4. Drug discovery and Evaluation by Vogel H.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K. Gupta.
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard.