

## SYLLABUS FOR 2<sup>nd</sup> PROFESSIONAL

### 4) PHARMACOLOGY & THERAPEUTICS

#### (i) Goal:

The broad goal of the teaching of undergraduate student in pharmacology is to inculcate a rational and scientific basis of therapeutics.

#### (ii) Objectives:

##### (a) KNOWLEDGE:

At the end of the course, the student shall be able to:

- (1) Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs;
- (2) List the Indications, contraindications, interactions and adverse reactions of commonly used drugs;
- (3) Indicate the use of appropriate drug in a particular disease with consideration to its cost, efficacy and safety for
  - (i) Individual needs;
  - (ii) Mass therapy under national health programmes
- (4) Describe the pharmacokinetic basis clinical presentation, diagnosis and management of common poisonings;
- (5) List the drugs of addition and recommend the management;
- (6) Classify environmental and occupational pollutants and state the management issues;
- (7) Indicate causations in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age;
- (8) Integrate the concept of rational drug therapy in clinical pharmacology;
- (9) State the principles underlying the concept of Essential Drugs;
- (10) Evaluate the ethics and modalities involved in the development and introduction of new drugs;

##### (b) SKILLS:

At the end of the course, the student shall be able to:

- (1) Prescribe drugs for common ailments;
- (2) Recognise adverse reactions and interactions of commonly used drugs;
- (3) Observe experiments designed for study of effects of drugs, bioassay and interpretation of the experimental data;
- (4) Scan information on common pharmaceutical preparations and critically evaluate drug formulations;

##### (c) INTEGRATION:

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre clinical departments.

#### 4) SYLLABUS OF PHARMACOLOGY:

i) Theory		
Sl.No.	Name of the Unit	No. of Hours
1.	General pharmacology	10
2.	Autonomic nervous system	8
3.	Central nervous system	16
4.	Cardio vascular system	8
5.	Biogenic amines & Autocoids	3
6.	Respiratory system	2
7.	Blood and blood forming agents	
	Anticoagulants, fibrinolytic drugs etc.,	4
8.	Kidney – diuretics	2
9.	Gastro intestinal system	3
10.	Drugs acting on the Uterus	1
11.	Chemotherapy	22
12.	Endocrinology	10
13.	Dermatological Pharmacology	1
14.	Geriatric pharmacology	1
15.	Paediatric Pharmacology/Neonatal Pharmacology	1
16.	Safety of drugs in Pregnancy	1
17.	Hazards of smoking, alcohol, narcotics,	2
	Environmental pollution	
18.	Immuno Pharmacology	1
19.	Metallic poisoning	1
20.	Vitamins & Sex Hormones	1
21.	National programmes including	2
	Management of AIDS	
<b>Total Hours</b>		<b>100</b>

#### DETAILED SYLLABUS OF PHARMACOLOGY

##### 1) General Pharmacology

- Sources of drugs
- Routes of drug administration
- Drug absorption
- Drug distribution
- Drug Bio transformation
- Drug excretion
- Methods of prolonging drug action
- Mechanisms of drug action
- Factors modifying drug action
- Bio-availability, Biological half-life, Bioequivalence
- Adverse drug reactions
- Drug dependence
- Drug Interactions
- Structural activity relationship
- Clinical evaluation of a New drug

##### 2) Autonomic Nervous System

- Introduction to Automic Nervous System
- Adrenergic transmission
- Adrenergic drugs
- Adrenergic blocking agents
- Cholinergic transmission
- Cholinergic drugs
- Cholinergic blocking agents
- Anticholinesterases
- Treatment of parkinsonism
- Treatment of Organophosphorous poisoning.

**3) Central Nervous System**

- Introduction of historical aspects, alcohols
- General Anaesthetics, basal anaesthesia of Premedication
- Depressants - Barbiturates, Opioids, Benzodiazepines, Antipyretics and analgesics, (NSAIDS)
- Stimulants – Central nervous system stimulants and spinal stimulants
- Epilepsy and anticonvulsants
- Drug addiction
- Skeletal Muscle relaxants
- Local Anaesthetics
- Psychopharmacology

**5) Autocoids**

- Histamine, Antihistamines
- Serotonin & its antagonists
- Prostaglandins, Brady Kinins
- Polypeptides, Rennin-Angiotensin mechanism

**7) Chemotherapy**

- Introduction and principles of Antimicrobial Therapy
- Sulfonamides, Cotrimoxazole and Fluoroquinolones
- Penicillins and Newer Penicillins
- Cephalosporins
- Macrolides and other Antibiotics
- Aminoglycosides Antibiotics
- Broad spectrum antibiotics
- Chemotherapy of UTI
- Antituberculosis drugs
- Anti leprotic drugs
- Anti fungal drugs
- Anti viral drugs & Chemotherapy of AIDS
- Anti Malarials
- Antiamoebic drugs
- Chemotherapy of other Anti protozoal infections
- Anthelmintics
- Antiseptics, Disinfectants and ectoparasites
- Chemotherapy of neoplastic diseases.

**4) Cardio vascular system**

- Cardiac glycosides
- Anti arrhythmic agents
- Anti hypertensives
- Anti anginal drugs
- Pharmacology of shock, Vasodilators and management of myocardial infarction, cardiogenic shock, left ventricular failure.
- Plasma lipid lowering agents
- Diuretics

**6) Miscellaneous topics**

- Heavy metal Poisoning
- Environmental Poisoning
- Hazards of smoking
- Drugs of addiction
- Geriatric Pharmacology
- Paediatric pharmacology
- Dermatological pharmacology
- General Principles of management of Poisoning
- Drugs during pregnancy, Lactation
- Drugs and preventive measures for AIDS, and National World Health Organisation programmes.

**9) Blood**

- Megaloblastic anaemias
- Microcytic (Iron deficiency) Anaemias
- Anti coagulants
- Fibrinolytic agents & Anti platelet agents

**10) Drugs acting on uterus**

- Uterine stimulants
- Uterine relaxants

**11) Respiratory system**

- Cough suppressants & Mucolytic agents
- Treatment of Bronchial Asthma

**8) Drugs acting on Uterus, Respiratory System and G.I.T. & Blood**

- Appetite stimulants & suppressants
- Emetics & Anti emetics (Prokinetic agents)
- Anti diarrhoeal agents Treatment of diarrhoea
- Treatment of peptic ulcer
- Purgatives

**12) Hormones (Endocrinology)**

- Posterior pituitary hormones & related factors, ADH.
- Anterior pituitary growth hormones
- Thyroid hormone & Antithyroid drugs
- Diabetes mellitus – Insulin, oral Antidiabetic drugs and newer antidiabetic drugs
- Adrenal cortical Steroids – Miners corticoids and synthetic steroids
- Parathyroid – Parathormone – Calcitonin – Calcium metabolism
- Sex hormones – Estrogens, Progestins and anti estrogens, antiprogestins
- Androgens – Antiandrogens

**Division of Pharmacology syllabus paper wise:**

**PAPER I :** General Pharmacology, ANS, CNS, CVS AND drugs acting on renal systems.

**PAPER II :** Chemotherapy, hormones, GIT, Blood, Drugs acting on uterus, Heavy metal poisons, Drugs for Resp. diseases.

**ii PRACTICAL SYLLABUS (Pharmacology)**

60 hours

This includes preparation of different dosage forms, formulations, prescription writing, clinical Pharmacy exercises, problem bases clinical study of cases, drug interactions, adverse drug reactions, demonstrations of the museum specimens attached to the department, visit to a pharmaceutical company, bedside teaching.

**EXPERIMENTAL PHARMACOLOGY DEMONSTRATION 60 hours**

- Effects of Cholinergic, adrenergic, histaminergic drugs and their antagonists on dogs.
- Skeletal muscle relaxant effect in rabbits.
- Opioid analgesic effect, Straub's test in mice
- Convulsant and anticonvulsant effects of certain drugs in rats and mice by different methods.
- General anaesthetic effect of ether of certain drugs in rats and mice by different methods
- Analgesic and anti inflammatory effects of certain drugs in rats and mice by different methods.
- Prothrombin time estimation
- Respiratory function tests and the effect of drugs in their alteration – Beta Blockers – Selective and non-selective.
- General principles of spectroscopy, Colorimetry, Fluorimetry HPLC etc., with live demonstration if possible
- Clinical Pharmacokinetics:

Study of half life of a drug, bio-availability etc., wherever facilities are available in the college or locally at any other institute.

iii) CLINICAL ORIENTED PROBLEMS: 60 hours

- Problem based learning (PBL)
- Continuing Medical Education (CME)
- Integrated teaching (ITC) classes
- Seminars
- Visit to Pharmaceutical firms

iv) Tutorials: 20 hours

The tutorial hours can be enhanced by reducing the same from either i), ii) or iii)

#### **SUGGESTED STANDARD TEXT BOOKS**

1. Pharmacology & Pharmacotherapeutics by Dr. Satoskar
2. Essentials of Medical Pharmacology by Dr. Tripathi.

#### **REFERENCE BOOKS:**

1. Applied & clinical Pharmacology by Rang Dale & Katzung.
2. Pharmacological basis of Therapeutics by Goodman & Gillman.
3. Clinical Pharmacology by Lurance.
4. Illustrated book in Pharmacology by Lippincott.