The ultimate goal of Pharmacology teaching is to induce in students the capability of providing service to patients in a competent and human manner

**Objectives**
Students must fulfill these main objectives:
- Acquisition of knowledge
- Ability to extend and improve that knowledge
- Apply their knowledge effectively in evaluation of drugs in the service of patient health care and proper estimation of benefit/risk ratio of the drugs.
- Updating the knowledge.

**Teaching Strategies**
A number of teaching strategies are adopted to these objectives. The major method of teaching is lecture/discussion, practical/demonstration. Problem–based learning methodologies are utilized to enhance the critical thinking skill. Learning opportunities also include computer–assisted instructions. Aim of these methodologies are to stimulate students faculties to participate more actively in the learning process by thinking and organizing the scientific material independently and by integrating information from several sources.

**Goals**
Important goals for the teaching pharmacology are:
- To teach basic concepts in drug use
- To avoid overload of information
- To expose students the representative drugs for major classes
- To give stress on drugs needed more in relation to community’s health problems
- To produce students who should demonstrate the application of such basic concepts on the use of drugs in a clinical situation
- To add continuously the newly introduced drugs.

**At the end of the course, students should be able to acquire knowledge to understand:**
- The influence of drugs on biochemical processes producing pathophysiological changes and be able to suggest the use of drugs to modify such pathophysiology
- (a) Drug receptor interaction as the pharmacological basis of therapeutics in understanding the drug action (b) principles of receptor
specificity to choose optimal therapeutic agent (c) receptor mediated effects to predict side effects

- Principles of pharmacokinetics to establish dose regimens and to optimize it in presence of altered physiological states like pregnancy, age and disturbed functions of major organ systems
- Students should be able to understand that the use of drugs does more good than harm (benefit: risk ratio)
- Knowledge of probability and severity of adverse reaction. For warning or reminder to patients and others
- To keep the students abreast with developments of newer drugs and therapy

**These objectives are achieved through:**

1. **Didactic Interactions**
   - Lectures are designed to cover the fundamental principles, major concepts, clear up difficulties and provide information on newer topics and drugs.
   - These are pre-planned lectures and are preceded with a handout for each topic. These handouts are not a substitute for the textbooks. It is primarily a study guide.
   - It induces interaction and discussion on topics rather than a monotonous ‘board’ teaching
   - It is practically a learning process for students rather than teaching process
   - Student’s interaction during these lecture are significant
   - Students are thus encouraged for self-learning
   - Encourage the student to ask about unclear points.

2. **Seminars**
   - Students search the material on their own with the help of textbooks, periodicals and internet.
   - Students present their seminar on power point
   - Active participation of all students and Faculty generate good interaction
   - Such presentation generates self-learning and induces self-confidence

3. **Experiments and Demonstrations**
   - These are well designed to correlate with the didactic teachings
   - Demonstration is carried out both in invitro and invivo

4. **Computer – Aided Practical**
• The practical program is available on basic concepts in Pharmacology, Cardiovascular system and Autonomic system
• These software have proved as a good supplement in the understanding of the subject

5. Simulated Clinical Case Reports
• This provides an opportunity to students to apply their knowledge of Pharmacology in the actual clinical situation
• Emphasis is also given to the possible diagnosis, laboratory investigations and the rational use of drug therapy
• Cases pertaining to common diseases are selected and attempt is made to cover as much as possible all topics of Pharmacology
• Cases are distributed well in advance and students are asked to work on these cases before discussing in the class
• These cases as well as computer-aided programs have been put in the computer of the Pharmacology Laboratory so as student can use it when ever they are free

Course Content in Pharmacology
Pharmacology course is divided into three semester of six months each. Pharmacology is started in the second semester of the First Year. Other two semesters are in the Second year. Final examination is held at the end of each semester

Basic Pharmacology
The objective is to provide essential concept of Pharmacological principles which will be required for understanding of the systemic pharmacology in every module.

• Mechanisms of drug action
• Source of drugs & DNA-Recombinant drugs
• Route of drug administration
• Absorption of drugs & Kinetics of Absorption
• Distribution of drugs
• Biotransformation of drugs
• Excretion of drugs
• Factors modifying the drug action
• Receptors and Drug Antagonism
• Drug monitoring.
• Drug Interaction
• Adverse drug reactions
Systemic Pharmacology

Drugs affecting Autonomic Nervous System
- Cholinergic drugs and Esters of Acetylcholine
- Cholinesterase inhibitors
- Myasthenia gravis and its drug management
- Anticholinergic drugs
- Nerve Gas poisoning and its drug management
- Skeletal Muscle relaxants
- Catecholamines
- Non-catecholamines
- Alpha and Beta Agonists
- Nasal decongestants
- Alpha and Beta Blockers
- Migraine and its management

Autocoids
- Histamine and H₁ – Antagonists
- 5-HT and antagonists
- Prostaglandins and its analogues
- Cytokines

Drugs affecting Respiratory System
- Drugs used in acute attack of bronchial asthma
- Drugs used in between attacks of bronchial asthma
- Drugs used in allergic rhinitis
- Mucolytics, Anti-tussives, Pharyngeal demulsants

Drugs affecting Cardiovascular System
- Diuretics
- Drugs used in Congestive Heart Failure
- Drugs used in the treatment of hypertension
- Drugs in the treatment of angina pectoris
- Drugs used in the treatment arrhythmia
- Drugs affecting platelet aggregation
- Anticoagulants and Thrombolytics
- Hypolipidemic drugs

Drugs affecting Gastrintestinal Tract
- Drugs used in treatment of peptic ulcer
- Drugs used in treatment of ulcerative colitis
- Drugs used in the treatment of Gastroesophygeal reflux
- Drugs used in treatment of Irritable Bowel Syndrome
- Treatment of diarrhea
- Laxatives
- Anti-emetics

**Drugs acting on Central Nervous System**
- Narcotic analgesics (Agonists, Agonist-Antagonists, Antagonists)
- Non-narcotic analgesics (non-steroidal anti-inflammatory drugs)
- Anti-gout drugs
- Antiparkinson’s drugs
- Drugs used in convulsive disorders
- Sedatives-Hypnotics and Anti-anxiety drugs
- Antidepressants
- Psychotropics
- Local Anesthetics
- General Anesthetics

**Drugs affecting Endocrine System**
- Hypoglycemic drugs (Insulin & Oral)
- Corticosteroids
- Thyroid hormone and Antithyroid drugs
- Drugs affecting Calcium metabolism
- Male sex hormones and Anabolics
- Female sex hormones and Oral Contraceptives
- Oxytocics and Tocolytics

**Anti-infective Agents**
- Sulphonamides
- Antibiotics
- Antifungal agents
- Antiprotozoal agents
- Anthelmintics
- Antiviral agents

**Drugs used in the treatment of Cancer**
**Heavy metal toxicity and use of chelating agents**
**Haematinics**
**Vitamins and Antioxidants**
**Gene Therapy**
Practical / Demonstrations / Computer-Aided Experiments

- Pharmaceutical dosage forms
- Prescription writing
- Effect of change in route of administration on sleeping time
- Variation in response to a fixed dose of drugs
- Affinity and Intrinsic activity using isolated smooth muscle
- Drug Antagonism
- Effect of drugs on pupil size, I.O.P. and reflexes
- Effect of drugs on blood pressure and heart rate
- Local anesthetic activity on corneal reflex
- Analgesic activity (Writhing reflex)

Pharmacotherapy

- The principles of pharmacotherapy introduces the concept and process of pharmaceutical care.
- Special emphasis is placed on the steps of clinical decision – making.
- Students are introduced to the ‘standardized patient’ and to the pathophysiology and therapeutics of basic disease states.
- The case study format is utilized extensively in the course.
- In short, the development of applied knowledge in the pharmacological management of human diseases are discussed
- The concept is integrated with the teaching of each module