

**M.Pharm. Credit Based System 2013**  
**Modern Pharmacology**

**4 hrs/week**

<b>Unit</b>	<b>Course Contents (Topics)</b>	<b>Hours</b>
<b>1</b>		<b>11</b>
1.1	Drug Absorption, distribution, metabolism and excretion.	5
1.2	<ul style="list-style-type: none"> <li>• Mechanisms of transport of drug across membranes.</li> <li>• Transporters involved in drug absorption, distribution and excretion processes.</li> </ul>	3
1.3	<ul style="list-style-type: none"> <li>• <i>Self study-Drug efflux pathways and experimental methods to study drug transport.</i></li> <li>• <i>Pharmacokinetic factors affecting drug action</i></li> </ul>	3
<b>2</b>	<b>Mechanism of drug action</b>	<b>11</b>
<b>2.1</b>	Classification of receptors and description of each class with examples.	1
<b>2.2</b>	<ul style="list-style-type: none"> <li>• Signal transduction mechanisms.</li> <li>• Detailed description of signal mediation through cascades after adrenergic, muscarinic, GABAergic, insulin receptor stimulation.</li> </ul>	4
<b>2.3</b>	Regulation of receptors, their involvement in various biological processes including diseases resulting from receptor malfunction and their role in pharmaco-therapeutics.	1
<b>2.4</b>	Regulation of intracellular calcium.	2
<b>2.5</b>	Pharmacodynamic interactions in a multicellular context e.g. Vascular wall (interactions of physiological ligands and drugs in pathophysiological setting).	1
<b>2.6</b>	<i>Self study- Classification and characterization of receptors-IUPHAR (Eg. 5-HT receptors)</i>	2
<b>3</b>	Functions of sodium and potassium channels and therapeutic potential of channel modulators.	<b>3</b>
<b>4.</b>	<p><b>Factors affecting drug responsiveness.</b></p> <ul style="list-style-type: none"> <li>• Alteration in concentration of drug that reaches receptors.</li> <li>• Variation in concentration of an endogenous receptor ligand.</li> <li>• Alteration in number and function of receptors.</li> <li>• Clinical selectivity: Beneficial vs. toxic effects of drugs.               <ol style="list-style-type: none"> <li>a. Beneficial and toxic effects mediated by the same receptor- effector mechanism.</li> <li>b. Beneficial and toxic effects mediated by identical receptors but in different tissues or by different effector pathways.</li> <li>c. Beneficial and toxic effects mediated by different types of receptors.                   <ul style="list-style-type: none"> <li>• Desensitization, tachyphylaxis.</li> <li>• Drug tolerance.</li> </ul> </li> </ol> </li> </ul>	<b>3</b>

5.	<b>Cellular and molecular mechanisms of</b>	<b>4</b>
5.1	Drug dependence (Eg. Morphine).	
5.2	Microbial resistance.	
6.	<b>Advances in therapy of</b>	<b>18</b>
6.1	CNS: Depression, Alzheimer's disease, Psychosis, Parkinson's disease, Epilepsy.	5
6.2	CVS: Hypertension, Angina Pectoris, Congestive cardiac failure, Arrhythmia.	5
6.3	Management of Diabetes Mellitus.	2
6.4	<i>Self study- Therapy of Malaria, AIDS, Cancer.</i> <i>Self study-Therapy using antisense oligonucleotides.</i>	6
7.	<b>Apoptosis</b>	<b>4</b>
7.1	Molecular biology, physiological, pharmacological implications and therapeutic prospects.	2
7.2	<i>Self study – Interaction between cell, growth factors and extracellular matrix.</i>	2
8.	<b>Immunopharmacology</b>	<b>6</b>
8.1	Introduction to immunopharmacology, immunomodulators, Immunostimulants and Immunosuppressants.	4
8.2	<i>Self study-Autoimmunity</i>	2
	<b>Total</b>	<b>60</b>

**Books (Recent editions to be referred)**

1. Rang and Dale's pharmacology-- Elsevier Churchill Livingston.
2. Lange's Basic and clinical pharmacology, Katzung B. G. Masters S. B., Trevor A. G. Tata McGraw Hill.
3. Goodman and Gilman's pharmacological basis of therapeutics, Edited by Laurence Brunton, Bruce Chabner and Bjorn Knollman, McGraw Hill.
4. Pharmacological reviews, Annual reviews Inc.
5. Advances in pharmacology, Academic Press.
6. Trends in Pharmacological Sciences, Cell Press Elsevier Publication.