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| Subject Code: 1PH1010505 | Subject Title: PHARMACOLOGY AND PHARMACOTHERAPEUTICS-I |
| Pre-requisite Subject | - NONE - |

Objectives of course:

1. This subject is intended to impart the fundamental knowledge on various aspects(classification, mechanism of action, therapeutic effects, clinical uses, side effects & contraindications) of drugs acting on different systems of body and in addition it also explain about various diseases/Conditions in detail.

Learning outcomes:

The student should be able to:

1. Understand the pharmacological actions of different categories of drugs
2. Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effect of drugs on animals by simulated experiments and using different animals.
5. Appreciate correlation of pharmacology with other bio medical sciences

| Teaching Scheme (Hours per week) | | | | Evaluation Scheme (Marks) | | | | | |
|----------------------------------|----------|-----------|--------|---------------------------|-----------------------|-----------------------|-----------------------|-------------|-----------|
| Lecture | Tutorial | Practical | Credit | Theory(T) | | Practical(P) | | Total Marks | |
| | | | | University Assessment | Continuous Assessment | University Assessment | Continuous Assessment | Theory | Practical |
| 3 | 0 | 3 | 6 | 80 | 20 | 80 | 20 | 100 | 100 |

| Subject Contents | | | |
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| Sr. No. | Topic | Total Hours | Weight (%) |
| 1 | Pharmacology of Peripheral and Autonomic Nervous system | | |
| | Neurohumoral transmission (autonomic and somatic)- organization and function, co-transmission. | 03 | 07 |
| | Cholinergic system and drugs- cholinergic transmission, receptors, Parasympathomimetics, anticholinesterases, anticholinesterase poisoning, Parasympatholytics, drugs acting on autonomic ganglia (stimulants and blockers). | 06 | 14 |
| | Adrenergic system and drugs- adrenergic transmission, direct, indirect and mixed Sympathomimetics, Sympatholytics, Neuron blocking agents. | 06 | 14 |
| | Skeletal muscle relaxants (peripherally, directly and centrally acting) – classification, mechanism of actions, actions and uses, difference between competitive and non-competitive blockers, difference between centrally and peripherally acting muscle relaxants. | 03 | 07 |
| | Local anaesthetics- classification, mechanism of actions, local and systemic actions, adverse effects, uses and techniques of local anaesthesia. | 02 | 04 |
| 2 | Autacoids | | |
| | Histamine- pharmacological actions, pathophysiological actions, Histamine releasers, antihistaminics. | 03 | 07 |
| | 5-HT- pharmacological and pathophysiological actions, 5-HT antagonists, drug therapy of migraine. | 03 | 07 |
| | Prostaglandins and leukotrienes- actions, pathophysiological role, uses, Platelet activating factor, bradykinin., angiotensin. | 02 | 04 |
| 3 | Pharmacology of following class of drugs | | |

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| | Laxatives- classification, mechanism of action, details of each class, and antidiarrhoeal drugs- oral rehydration, drug therapy- specific and non- specific, details of each class of drugs. | 03 | 07 |
| | Emetics and antiemetics- classification, uses, contraindications. | 02 | 04 |
| | Antitussive agents and Expectorants- classification , individual drugs. | 02 | 04 |
| 4 | Definition, epidemiology, etiology, pathophysiology, signs and symptoms, diagnosis, complications, treatment and management of following diseases/conditions: | | |
| | Bronchial asthma, COPD | 03 | 07 |
| | Peptic Ulcer Disease, Gastro Esophageal Reflux Disorder (GERD) | 02 | 04 |
| | Inflammatory Bowel Disease | 02 | 04 |
| | Hepatitis | 02 | 04 |
| | Glaucoma | 01 | 02 |

List of Experiments:

Practical exercises should be based on theoretical topics. The practical should broadly cover the following:

- 1 Introduction to experimental pharmacology, commonly used instruments in experimental pharmacology
- 2 Legal regulations for the use of experimental animals, common laboratory animals , Euthanasia of laboratory animals, anesthetics used in animal studies
- 3 Some common and standard techniques for drug administration (intravenous injection, intra gastric administration) and collection of blood samples
- 4 Preparation of different solutions for experiments. Drug dilutions, use of molar and W/V solutions in experimental pharmacology
- 5 To study the effects of various agonists (pD2) and antagonist (pA2) using isolated preparations.
- 6 To record the concentration response curve (CRC) of acetylcholine using rat ileum/chicken preparation.
- 7 To study the effect of atropine on concentration response curve (CRC) of acetylcholine using rat/chicken ileum preparation.
- 8 To record the concentration response curve (CRC) of Histamine on guinea pig/chicken ileum
- 9 To study the effect of mepyramine on concentration response curve (CRC) of Histamine using guinea pig /chicken ileum preparation
- 10 Demonstration Experiments :-To study the effects of autonomic drugs on rabbits eye
- 11 Demonstration Experiments :-To study the effect of hepatic microsomal enzyme inhibitors and inducers on pentobarbitone sleeping time
- 12 Case studies (questions based on history, etiology, symptoms, investigations, medication, adverse effects, drug interactions, pharmacists' advice)
- 13 To evaluate case study of Bronchial asthma / COPD (minimum 3 cases)
- 14 To evaluate case study of Peptic ulcer disease (minimum 3 cases)
- 15 a. To evaluate case study of Hepatitis (minimum 2 cases)
b. To evaluate case study of Cough (minimum 2 cases)
- 16 a. To evaluate case study of Glaucoma (1 case)
b. To evaluate case study of Organophosphorus poisoning (1 case)
c. To evaluate case study of Myasthenia gravis (1 case)
- 17 a. To evaluate case study of diarrhoea and constipation (minimum 2 cases)
b. To evaluate case study of emesis (minimum 2 cases)

List of References:

1. Satoskar, R.S. and Bhadarkar, S.D. Pharmacology and pharmacotherapeutics. 16th edition (single volume), 1999. Publisher: Popular, Dubai.
2. Rang, H.P. & Dale, M.M. Pharmacology. 4th edition, 1999. Publisher: Churchill Living stone.
3. Goodman Gilman, A., Rall, T.W., Nies, A.I.S. and Taylor, P. Goodman and Gilman's The pharmacological Basis of therapeutics. 9th Ed, 1996. Publisher Mc Graw Hill, Pergamon press.
4. Katzung, B.G. Basic and clinical pharmacology. Latest edition. Publisher: Prentice Hall, Int.
5. Ghosh, M.N. Fundamentals of experimental pharmacology. Latest edition, Publisher: Scientific book agency, Kolkata.
6. R.K.Goyal. Practicals in Pharmacology: B.S. Shah Prakashan, Ahmedabad.
7. Clinical pharmacy and therapeutics . Roger Walker and Cate Whittlesea.
8. Textbook of therapeutics. Drug and disease management. Eric T Herfindal Dick R Gourley.

e-Resources:

1. <http://www.smartech.com/course/pharmacology-of-autocoids-and-related-drugs/>
2. <https://www.pharmacologyeducation.org/pharmacology/autonomic-pharmacology>