



DEPARTMENT OF PHARMACY

Course: Diploma in Pharmacy

LESSON PLAN

Faculty Name: Palika Sehgal

Subject Name: Pharmaceutical Chemistry

Class: D. Pharmacy – Ist year

Subject Code: ER20-12T

Scope of the Subject: This course is designed to impart basic knowledge on the chemistry of drugs and pharmaceuticals. The course gives knowledge of chemical structure, storage conditions and medicinal uses of organic and inorganic chemicals and quality control aspects of pharmaceuticals.

Course outcome: Upon completion of the course, the student shall be able to understand

- the various impurities in pharmaceuticals and tests to identify them
- the chemical nature and medicinal uses of drug substances
- the storage conditions of pharmaceuticals
- the quantitative and qualitative analysis of official compounds

Number of Lectures: 75

Each lecture: 01 hour

Lecture No.	Particular	Remark/Date
Module 1: Introduction to Pharmaceutical chemistry		
1.	Introduction to Pharmaceutical chemistry: Scope and objectives	
2.	Types of errors: Accuracy, precision, significant figures	
3.	Sources Impurities in Pharmaceuticals: Source and effect of impurities in pharmacopeial substances	
4.	Importance of limit test, Principle and procedures of Limit tests for chlorides	
5.	Importance of limit test, Principle and procedures of Limit tests for sulphates	
6.	Importance of limit test, Principle and procedures of Limit tests for iron	
7.	Importance of limit test, Principle and procedures of Limit tests for heavy metals	
8.	Importance of limit test, Principle and procedures of Limit tests for arsenic	
Module 2: Volumetric Analysis		
9.	Fundamentals of volumetric analysis	
10.	Acid-base titration	
11.	Non-aqueous titration	
12.	Precipitation titration	
13.	Redox titration	

14.	Complexometric titration	
15.	Gravimetric analysis: Principle and method	
16.	Gravimetric analysis: Principle and method	
Module 3: Inorganic Pharmaceuticals		
17.	Introduction of Inorganic Pharmaceuticals products	
18.	Pharmaceutical formulations, storage conditions and uses of	
19.	Haematinics: Ferrous sulphate, Ferrous fumarate, Ferric ammonium citrate, Ferrous ascorbate, Carbonyl iron	
20.	Gastro-intestinal Agents Antacids: Aluminium hydroxide gel, Magnesium hydroxide, Magaldrate, Sodium bicarbonate, Calcium Carbonate, Acidifying agents, Adsorbents, Protectives, Cathartics	
21.	Topical agents: Silver Nitrate, Ionic Silver, Chlorhexidine Gluconate, Hydrogen peroxide, Boric acid, Bleaching powder, Potassium permanganate	
22.	Dental products: Calcium carbonate, Sodium fluoride, Denture cleaners, Denture adhesives, Mouth washes	
23.	Medicinal gases: Carbon dioxide, nitrous oxide, oxygen	
Module 4: Introduction to nomenclature		
24.	Introduction to nomenclature of organic chemical systems with particular reference to heterocyclic compounds containing up to Three rings	
25.	Introduction to nomenclature of organic chemical systems with particular reference to heterocyclic compounds containing up to Three rings	
Module 5: Drugs acting on Central Nervous System		
26.	Anaesthetics: Thiopental sodium, Ketamine hydrochloride , Propofol	
27.	Sedatives and Hypnotics: Diazepam, Alprazolam	
28.	Sedatives and Hypnotics: Nitrazepam, Phenobarbital	
29.	Antipsychotics: Chlorpromazine hydrochloride, Haloperidol Chlorpromazine, Olanzapine,	
30.	Antipsychotics: Risperidone, Sulperide, Quetiapine, Lurasidone	
31.	Anticonvulsants: Phenytoin, Ethosuximide, Carbamazepine Topiramate, Vigabatrin	
32.	Anticonvulsants: Clonazepam, Primidone, Valproic acid, Gabapentin, Lamotrigine	
33.	Anti-depressant: Amitriptyline hydrochloride, Imipramine hydrochloride, Fluoxetine	
34.	Anti-depressant: Venlafaxine, Duloxetine, Sertraline, Citalopram, Escitalopram, Fluvoxamine, Paroxetine	
Module 6: Drugs acting on Autonomic Nervous System		
35.	Sympathomimetic agents: Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine, Dopamine, Terbutaline, Salmeterol, Salbutamol, Albuterol, Naphazoline, Tetrahydrazoline.	
36.	Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexadrine. Agents with mixed mechanism: Ephedrine, Metaraminol.	
37.	Adrenergic Antagonists: Alpha adrenergic blockers: Tolazoline, Phentolamine, 9	

	Phenoxybenzamine, Prazosin	
38.	Beta adrenergic blockers: Propranolol, Atenolol, Carvedilol	
39.	Cholinergic drugs and related agents: Direct acting agents: Acetylcholine, Carbachol, Pilocarpine.	
40.	Cholinesterase inhibitors: Neostigmine, Edrophonium chloride, Tacrine hydrochloride, Pralidoxime chloride, Echothiophate iodide.	
41.	Cholinergic Blocking agents: Solanaeous alkaloids and analogues: Atropine sulphate, Ipratropium bromide.	
42.	Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clindinium bromide, Dicyclomine hydrochloride	
43.	Synthetic cholinergic blocking agents: Tridihex ethylchloride, Isopropamide iodide, and Ethopropazine hydrochloride	
Module 7: Drugs acting on Cardiovascular System		
44.	Anti-arrythmic Drugs: Quinidine sulphate, Procainamide hydrochloride, Verapamil, Phenytoin sodium	
45.	Anti-arrythmic Drugs: Lorcainide hydrochloride, amiodarone and Sotalol	
46.	Anti-hypertensive Agents: Propranolol, Captopril, Ramipril, Methyldopate Hydrochloride	
47.	Anti-hypertensive Agents: Clonidine hydrochloride., Hydralazine hydrochloride, Nifedipine	
48.	Antianginal agents: isosorbide dinitrate	
Module 8: Diuretics		
49.	Acetazolamide, frusemide, bumetanide, metolazone	
50.	Chlorthiazide, benzthiazide, xipmide, spiranolactone	
Module 9: Hypoglycemic agents		
51.	Insulin and its preparations, metformin, glibenclamide	
52.	Glimepiride, pioglitazone, repaglinide, gliflozins, gliptins	
Module 10: Analgesic and anti-inflammatory agents		
53.	Morphine analogues, Narcotic antagonists; Nonsteroidal anti-inflammatory agents (NSAIDs) aspirin, diclofenac, ibuprofen,	
54.	Nonsteroidal anti-inflammatory agents (NSAIDs) piroxicam, celecoxib, mefenamic acid, paracetamol, aceclofenac	
Module 11: Anti-Infective Agents		
55.	Antifungal Agents: Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole, Itraconazole, Fluconazole, Naftifine Hydrochloride	
56.	Urinary Tract Anti-Infective Agents: Norfloxacin, Ciprofloxacin, Ofloxacin, Moxifloxacin,	
57.	Anti-Tubercular Agents: INH, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide	
58.	Rifampicin, Bedaquiline, Delamanid, Pretomanid	
59.	Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir, Foscarnet	
60.	Zidovudine, Ribavirin, Remdesivir, Favipiravir	

61.	Antimalarials: Quinine Sulphate, Chloroquine Phosphate, Primaquine Phosphate, Mefloquine, Cycloguanil, Pyrimethamine, Artemisinin	
62.	Sulfonamides: Sulfanilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide, Mafenide Acetate, Cotrimoxazole, Dapsone	
Module 12: Antibiotics		
63.	Penicillin G	
64.	Amoxicillin	
65.	Cloxacillin	
66.	Streptomycin	
67.	Tetracyclines: Doxycycline	
68.	Tetracyclines: Minocycline	
69.	Macrolides: Erythromycin	
70.	Macrolides: Azithromycin	
71.	Miscellaneous: Chloramphenicol	
72.	Miscellaneous: Clindamycin	
Module 13: Anti-Neoplastic Agents		
73.	Cyclophosphamide, Busulfan, Mercaptopurine, Fluorouracil,	
74.	Methotrexate, Dactinomycin, Doxorubicin Hydrochloride,	
75.	Vinblastine Sulphate, Cisplatin, Dromostanolone Propionate	

Teacher in-charge

HOD

Principal