

GAUTAM COLLEGE OF PHARMACY, HAMIRPUR

Lesson Plan

Course: D Pharmacy 1st Year

Session:2024-2025

Subject Name: Pharmaceutical Chemistry

Subject Code: ER20-12T

Total Teaching Hours: 75

Name of Teacher:

Each Lecture: 1 hour

Scope: This course is designed to impart basic knowledge on the chemical structure, storage conditions and medicinal uses of organic and inorganic chemical substances used as drugs and pharmaceuticals. Also, this course discusses the impurities, quality control aspects of chemical substances used in pharmaceuticals.

Chapter No.	Topic No.	Title of Topic	Learning outcome	Schedule Date	Teaching aids to be used	Assignment Detail	Remarks
1	1	Introduction to pharmaceutical chemistry: Scope and objectives	After completion of the topic student will understand about pharmaceutical chemistry	03/09/2024	Hand Written Notes/PPT		
		Tutorial-1		03/09/2024			
	2	Sources and types of errors: Accuracy, Precision		04/09/2024			
	3	Significant figures		07/09/2024			
	4	Impurities in Pharmaceuticals: source and effect of impurities in Pharmacopoeial substances		10/09/2024			
		Tutorial-2		10/09/2024			
	5	Importance of limit test		11/09/2024			
	6	Limit tests for chloride, sulphates, iron		17/09/2024			
		Tutorial-3		17/09/2024			

	7	Limit test for heavy metal and arsenic		18/09/2024			
	8	Limit test for arsenic		21/09/2024			
2	9	Volumetric analysis: Fundamental of volumetric analysis		24/09/2024	Hand Written Notes/PPT		
		Tutorial-4		24/09/2024			
	10	Acid base titration, Non-aqueous titration		25/09/2024			
	11	Principle of precipitation titration		28/09/2024			
	12	Different methods of precipitation titration		01/10/2024			
		Tutorial-5		01/10/2024			
	13	Complexometric titration		05/10/2024			
	14	Redox titration		08/10/2024			
		Tutorial-6		08/10/2024			
	15	Gravimetric analysis: Principal of gravimetric analysis		09/10/2024			
	16	Method of gravimetric analysis		15/10/2024			
		Tutorial-7		15/10/2024			
3	17	Inorganic pharmaceuticals: Haematinics: Ferrous sulphate, Ferrous fumarate, Ferric ammonium citrate		16/10/2024	Hand Written Notes/PPT		
	18	Ferrous ascorbate, Carbonyl iron		19/10/2024			
	19	Gastrointestinal Agents: Antacids, aluminium hydroxide gel, Magnesium hydroxide, Magaldrate,		22/10/2024			

		sodium bicarbonate, calcium carbonate					
		Tutorial-8		22/10/2024			
	20	Acidifying agents, adsorbent, protective, cathartic		23/10/2024			
	21	Topical agents: Silver nitrate, Ionic silver, Chlorhexidine Gluconate, Hydrogen peroxide, boric acid, bleaching powder, potassium permanganate		05/11/2024			
		Tutorial-9		05/11/2024			
	22	Dental product: Calcium carbonate, sodium fluoride, denture cleaners, Denture adhesive, mouth washes,		06/11/2024			
	23	Medicinal gases: Carbon dioxide, nitrous oxide, oxygen		12/11/2024			
		Tutorial-10		12/11/2024			
4	24	Heterocyclic compounds - Introduction to nomenclature of organic chemical systems	After completion of the topic student will understand Heterocyclic compounds	13/11/2024	Hand Written Notes/PPT		
	25	Heterocyclic compound containing up to three rings		16/11/2024			
5	26	Drug acting on central nervous system: Anaesthetics - Thiopental sodium, ketamine hydrochloride, propofol	After completion of the topic student will understand Drug acting on central nervous system	19/11/2024	Hand Written Notes/PPT		
		Tutorial-11		19/11/2024			

	27	Sedative and hypnotic - Diazepam, alprazolam, nitrazepam, phenobarbital		20/11/2024			
	28	Antipsychotics – Chlorpromazine hydrochloride, Haloperidol, Risperidone, sulpiride, Olanzapine, Quetiapine, Lurasidone		23/11/2024			
	29	Anticonvulsant - Phenytoin, carbamazepine, clonazepam, valproic acid		26/11/2024			
		Tutorial-12		26/11/2024			
	30	Gabapentin, topiramate, vigabatrin, lamotrigine		27/11/2024			
	31	Antidepressants – Amitriptyline hydrochloride, imipramine hydrochloride		30/11/2024			
	32	Fluoxetine, venlafaxine		10/12/2024			
		Tutorial-13		10/12/2024			
	33	Duloxetine, sertraline, citalopram		11/12/2024		Overview on green chemistry	
	34	Escitalopram, fluvoxamine, paroxetine		17/12/2024			
		Tutorial-14		17/12/2024			
6	35	Drugs acting on autonomic nervous system: Sympathomimetic agents – Nor-epinephrine, epinephrine, phenylephrine, dopamine, terbutaline, salbutamol	After completion of the topic student will understand Drugs acting on autonomic nervous system	18/12/2024	Hand Written Notes/PPT		

	36	Nephazoline, tetrahydrozoline, amphetamine, pseudoephedrine, ephedrine, metaraminol		21/12/2024			
	37	Adrenergic antagonists – Alpha adrenergic blockers: Tolazoline, phentolamine, phenoxybenzamin e prazosin. Beta adrenergic blockers: propranolol, atenolol, carvedilol		24/12/2024			
		Tutorial-15		24/12/2024			
	38	Cholinergic drugs and related agent		31/12/2024			
		Tutorial-16		31/12/2024			
	39	Acetylcholine, carbachol, pilocarpine		17/01/2025			
	40	Cholinesterase inhibitors - Neostigmine, edrophonium chloride, tacrine hydrochloride		18/01/2025			
	41	Cholinergic blocking agent - Atropine sulphate, ipratropium bromide		21/01/2025			
		Tutorial-17		22/01/2025			
	42	Synthetic cholinergic blocking agents: Cyclopentolate hydrochloride		24/01/2025			
	43	Clidinium bromide, Dicyclomine Hydrochloride		28/01/2025			
		Tutorial-18		29/01/2025			

7	44	Drugs Acting on Cardiovascular System Anti-Arrhythmic Drugs: Quinidine Sulphate, Procainamide Hydrochloride, Verapamil, Phenytoin Sodium.	After completion of the topic student will understand drug acting on cardiovascular system	31/01/2025	Hand Written Notes/PPT		
	45	Lidocaine Hydrochloride, Lorcainide Hydrochloride, Amiodarone and Sotalol		04/02/2025			
		Tutorial-19		05/02/2025			
	46	Anti-Hypertensive Agents: Propranolol, Captopril, Ramipril, Methyldopate Hydrochloride,		07/02/2025			
	47	Clonidine Hydrochloride, Hydralazine Hydrochloride, Nifedipine		11/02/2025			
	48	Antianginal Agents: Isosorbide Dinitrate		14/02/2025			
8	49	Diuretics: Acetazolamide, Frusemide, Bumetanide, Chlorthalidone,	After completion of the topic student will understand diuretics	15/02/2025	Hand Written Notes/PPT		
	50	Benzthiazide, Metolazone, Xipamide,		18/02/2025			

		Spironolactone					
		Tutorial-20		19/02/2025			
9	51	Hypoglycemic Agents: Insulin and Its Preparations	After completion of the topic student will understand Hypoglycemic Agents	21/02/2025	Hand Written Notes/PPT		
	52	Metformin, Glibenclamide, Glimepiride,		22/02/2025			
	53	Pioglitazone, Repaglinide, Gliflozins, Gliptins.		25/02/2025			
10	54	Analgesic And Anti-Inflammatory Agents: Morphine Analogues, Narcotic Antagonists	After completion of the topic student will understand Analgesic And Anti-Inflammatory Agents	28/02/2025	Hand Written Notes/PPT		
	55	Nonsteroidal Anti-Inflammatory Agents (NSAIDs) - Aspirin, Diclofenac, Ibuprofen, Piroxicam		01/03/2025			
	56	Celecoxib, Mefenamic Acid, Paracetamol, Aceclofenac		04/03/2025			
		Tutorial-21		05/03/2025			
11	57	Anti-Infective Agents: Antifungal Agents: Amphotericin-B, Griseofulvin, Miconazole, Ketoconazole	After completion of the topic student will understand Anti-Infective Agents	15/03/2025	Hand Written Notes/PPT		
	58	Itraconazole, Fluconazole, Naftifine Hydrochloride		21/03/2025		Significance of quality control and quality assurance in pharmaceutical industries	
	59	Urinary Tract Anti-Infective		22/03/2025			

		Agents: Norfloxacin, Ciprofloxacin, Ofloxacin, Moxifloxacin					
	60	Anti-Tubercular Agents: INH, Ethambutol, Para Amino Salicylic Acid, Pyrazinamide, Rifampicin, Bedaquiline, Delamanid, Pretomanid		25/03/2025			
		Tutorial-22		26/03/2025			
	61	Antiviral Agents: Amantadine Hydrochloride, Idoxuridine, Acyclovir, Foscarnet, Zidovudine, Ribavirin, Remdesivir, Favipiravir		28/03/2025			
	62	Antimalarials: Quinine Sulphate, Chloroquine Phosphate, Primaquine Phosphate		29/03/2025			
		Tutorial-23		02/04/2025			
	63	Mefloquine, Cycloguanil, Pyrimethamine, Artemisinin		04/04/2025			
	64	Sulfonamides:Sulf -anilamide, Sulfadiazine, Sulfamethoxazole, Sulfacetamide, Mafenide Acetate, Cotrimoxazole, Dapsone		05/04/2025			
12	65	Antibiotics: Penicillin G	After completion of the topic student will understand	08/04/2025	Hand Written Notes/PPT		
		Tutorial-24		09/04/2025			
	66	Amoxicillin, Cloxacillin,		11/04/2025			

			Antibiotics				
		Tutorial-25		16/04/2025			
	67	Streptomycin		22/04/2025			
		Tutorial-26		23/04/2025			
	68	Tetracyclines: Doxycycline, Minocycline		25/04/2025			
	69	Macrolides: Erythromycin		26/04/2025			
		Tutorial-27		30/04/2025			
	70	Azithromycin		02/05/2025			
	71	Miscellaneous: Chloramphenicol		03/05/2025			
	72	Clindamycin		06/05/2025			
		Tutorial-28		07/05/2025			
13	73	Anti-neoplastic agents: Cyclophosphamide, busulfan, mercaptopurine, fluorouracil		09/05/2025	Hand Written Notes/PPT		
	74	Methotrexate, dactinomycin, doxorubicin hydrochloride		13/05/2025			
		Tutorial-29		14/05/2025			
	75	Vinblastine sulphate, cisplatin, dromostanolone propionate	After completion of the topic student will understand Anti-neoplastic agents	16/05/2025		Various software programs available for computer aided drug discovery	

1. Total no. of Assignment given:

2. Model question paper given:

Yes/No

3. No. of extra Lectures delivered:

4. Feedback from student taken:

Yes/No

Signature of the subject teacher
Principal

Director cum