D.Pharm Second Year

GSP 2.1	Pharmaceutics-II, Theory	75 Hrs

Unit-I

1. **Dispensing Pharmacy:**
    1. **Prescriptions:** Reading and understanding of prescription; latin terms commonly used (detailed study is not necessary), modern methods of prescribing, adoption of metric system, calculations involved in dispensing.
    2. **Incompatibilities in prescriptions:** Study of various types of incompatibilities—physical, chemical and therapeutic.
    3. **Posology:** Dose and dosage of drugs, factors influencing dose, calculations of doses on the basis of age, sex and surface area, veterinary doses.

Unit-II

2. **Dispensed Medications:**

(Note: A detailed study of the following dispensed medication is necessary. Methods of preparation with theoretical and practical aspects, use of appropriate containers and closures, special labeling requirements and storage conditions should be highlighted).

1. **Powders:** Types of powders, advantages and disadvantages of powders, granules, cachets and tablet triturates. Preparation of different types of powders encountered in prescriptions. Weighing methods, possible errors in weighing, minimum weighable amount and weighing of a material below the minimum weighable amount, geometric dilution and proper usage and care of dispensing balance.

2. Liquid oral dosage forms:

1. Monophasic—theoretical aspects including commonly used vehicles, essential adjuvants like
   stabilizers, colourants and flavours, with examples.

Review of the following monophasic liquids with details of formulation and practical methods.

Liquids for internal administration	*Liquids for external administration or used on mucous membranes*
Mixtures and concentrates,	Gargles
Syrups	Mouth washes
	Throat paints
Elixirs	Douches
	Ear drops
	Nasal drops & sprays

Liniments

Lotions

Unit-III

2. Biphasic liquid dosage forms:
   - Suspensions (elementary study)—suspensions containing diffusible solids and liquids and their preparations. Study of the adjuvants used like thickening agents, wetting agents, their necessity and quantity to be incorporated. Suspensions of precipitate forming liquids like tinctures, their preparations and stability. Suspensions produced by chemical reaction. An introduction to flocculated / non-flocculated suspension system.
   - Emulsions—types of emulsions, identification of emulsion system, formulation of emulsions, selection of emulsifying agents. Instabilities in emulsions. Preservation of emulsions.

3. Dental and cosmetic preparations:

Introduction to dentifrices, facial cosmetics, deodorants, antiperspirants, shampoos, hair dressings and hair removers.

Unit-IV

4. Semi-solid dosage forms:

1. Ointments—types of ointments, classification and selection of dermatological vehicles. Preparation and stability of ointments by the following processes: (i) trituration (ii) fusion (iii) chemical reaction (iv) emulsification.
2. Pastes—differences between ointments and pastes, bases of pastes, preparation of pastes and their preservation.
3. Jellies—an introduction to the different types of jellies and their preparation.
4. An elementary study of poultice.
5. Suppositories and passaries—their relative merits and demerits, types of suppositories, suppository bases, classification, properties. Preparation and packing of suppositories. Use of suppositories for drug absorption.

Unit-V

Sterile dosage forms:

1. Parenteral dosage forms—definition, general requirements for parenteral dosage forms, types of parenteral formulations, vehicles, adjuvants, processing, personnel, facilities and quality control. Preparation of intravenous fluids and admixtures—total parenteral nutrition, dialysis fluids.
2. Sterility testing, particulate matter monitoring, faulty seal packaging.
3. Ophthalmic products—study of essential characteristics of different ophthalmic preparations. Formulation additives, special precautions in handling and storage of ophthalmic products.

GSP 2.1P	Pharmaceutics-II, Practical	100 Hrs

Dispensing of at least 100 products covering a wide range of preparations such as mixtures, emulsions, lotions, liniments, ENT preparations, ointments, suppositories, powders, incompatible prescriptions etc.

GSP 2.2	Pharmaceutical Chemistry-II, Theory	100 Hrs

Unit-I

1. Introduction to the nomenclature of organic chemical systems with particular reference to heterocyclic system containing upto 3 rings.
2. The chemistry of following pharmaceutical organic compounds covering their nomenclature, chemical structure, uses and the important physical and chemical properties (chemical structure of only those compounds marked with asterisk(*).

The stability and storage conditions and the different types of pharmaceutical formulations of these drugs and their popular brand names.

Antiseptics and disinfectants—proflavine*, benzalkoniumchloride, cetrimide, chlorocresol*, chloroxylene, formaldehyde solution, hexachlorophene, liquified phenol, nitrofurantoin.

Sulfonamides—sulfadiazine, sulfaguanidine*, phthalylsulfathiazole, succinylsulfathiazole, sulfadimethoxine, sulfamethoxypyridazine, sulfamethoxazole, co-trimoxazole, sulfacetamide*.

Antileprotic drugs—clofazimine, thiambutosine, dapsone*, solapsone.

Anti-tubercular drugs—isoniazid*, PAS*, streptomycin, rifampicin, ethambutol*, thiacetazone, ethionamide, cycloserine, pyrazinamide*.

Antiamoebic and anthelminitic drugs—emetine, metronidazole*, halogenated hydroxyquinolines, diloxanide furoate, paromomycin, piperazine*, mebendazole, D.E.C.*.

Antimalarial drugs—chloroquine*, amodiaquine, primaquine, proguanil, pyrimethamine*, quinine, trimethoprim.

Unit-II

Antibiotics—benzyl penicillin*, phenoxy methyl penicillin*, benzathine penicillin, ampicillin*, cloxacillin, carbenicillin, gentamicin, neomycin, erythromycin, tetracycline, cephalexin, cephaloridine, cephalothin, griseofulvin, chloramphenicol.

Antifungal agents—undecyclenic acid, tolnaftate, nystatin, amphotericin B, hamycin.

Tranquilizers—chlorpromazine*, prochlorperazine, trifluoperazine, thiothixene, haloperidol*, triperiodol, oxypertine, chlordizepoxide, diazepam* lorazepam, meprobamate.

Hypnotics—phenobarbitone*, butobarbitone, cyclobarbitone, nitrazepam, glutethimide*, methyprylone, paraldehyde, triclofos sodium.

Unit-III

General anaesthetics—halothane*, cyclopropane*, diethyl ether*, methohexital sodium, thiopental sodium, trichloroethylene.

Antidepressant drugs—amitriptyline, nortryptyline, imipramine*, phenelzine, tranylcypromine.

Analeptics—theophylline, caffeine*, coramine*, dextro-amphetamine.

Adrenergic drugs—adrenaline*, noradrenaline, isoprenaline*, phenylephrine, salbutamol, terbutaline, ephedrine*, pseudoephedrine.

Adrenergic antagonist—tolazoline, propranolol*, practolol.

Cholinergic drugs—neostigmine*, pyridostigmine, pralidoxime, pilocarpine, physostigmine*.

Cholinergic antagonists—atropine*, hyoscine, homatropine, propantheline*, benztropine, tropicamide, biperiden*.

Unit-IV

Diuretic drugs—furosemide*, chlorothiazide, hydrochlorothiazide* benzthiazide, urea*, mannitol*, ethacrynic acid.

Cardiovascular drugs—ethyl nitrite*, glyceryl trinitrate, alpha methyl dopa, guanethidine, clofibrate, quinidine.

Hypoglycemic agents—insulin, chlorpropamide*, tolbutamide, glibenclamide, phenformin*, metformin.

Coagulants and anticoagulants—heparin, thrombin, menadione*, bishydroxycoumarin, warfarin sodium.

Local anaesthetics—lignocaine*, procaine*, benzocaine,

Histamine and antihistaminic agents—histamine, diphenhydramine*, promethazine, cyproheptadine, mepyramine, pheniramine, chlorpheniramine*.

Unit-V

Analgesics and antipyretics—morphine, pethidine*, codeine, methadone, aspirin*, paracetamol*, analgin, dextropropoxyphene, pentazocine.

Nonsteroidal antiinflammatory agents—indomethacin*, phenylbutazone*, oxyphenbutazone, ibuprofen.

Thyroxine and antithyroids—thyroxine*, methimazloe, methylthiouracil, propylthiouracil.

Diagnostic agents—iopanoic acid, propyliodone, sulfobrompthalein, sodium indigotindisulfonate, indigocarmine, evans blue, congo red, fluorescein sodium.

*Anticonvulsants, cardiac glycosides, antiarrhythmics, antihypertensives and vitamins.

Steroidal drugs—betamethasone, cortisone, hydrocortisone, prednisolone, progesterone, testosterone, oestradiol, nandrolone.

Antineoplastic drugs—actinomycin, azathioprine, busulphan, chloramubucil, cisplatin, cyclophosphamide, daunorubicin hydrochloride, fluorouracil, mercaptopurine, methotrexate, mytomycin.

GSP 2.2P	Pharmaceutical Chemistry-II, Practical	75 Hrs

1. Systematic qualitative testing of organic drugs involving solubility determination, melting point and/or boiling point, detection of elements and functional groups (10 compounds).
2. Official identification tests for certain groups of drugs included in the I.P., like barbiturates, sulfonamides, phenothiazines, antibiotics etc. (8 compounds).
3. Preparation of three simple organic preparations.

GSP 2.3	Pharmacology and Toxicology, Theory	75 Hrs

Unit-I

1. Introduction to pharmacology, scope of pharmacology.
2. Routes of administration of drugs, their advantages and disadvantages.
3. Various processes of absorption of drugs and the factors affecting them. Metabolism, distribution and excretion of drugs.
4. General mechanism of drugs action and the factors which modify drugs action.

Unit-II

5. Pharmacological classification of drugs. The discussion of drugs should emphasise the following aspects:
    1. Drugs acting on the central nervous system:
        1. General anaesthetics, adjunction to anaesthesia, intravenous anesthetics.
        2. Analgesic, antipyritic and non-steroridal antiinflammatory drugs, narcotic analgesics, antirheumatic and antigout remedies, sedatives and hypnotics, psychopharmacological agents, anti-convulsants, analeptics.
        3. Centrally acting muscle relaxants and antiparkinsonism agents.

Unit-III

2. Local anaesthetics.
3. Drugs acting on autonomic nervous system.
    1. Cholinergic drugs, anticholinergic drugs, anticholinesterase drugs.
    2. Adrenergic drugs and adrenergic receptor blockers.
    3. Neurone blockers and ganglion blockers.
    4. Neuromuscular blockers, drugs used in myasthenia gravis. (iv)Drugs acting one eye, mydriactics, drugs used in glaucoma.

Unit-IV

5. Drugs acting on respiratory system-respiratory stimulants, bronchodilators, nasal decongestants, expectorants and antitussive agents.
6. Antacids, physiological role of histamine and serotonin, histamine and antihistamines, prostaglandins.
7. Cardiovascular drugs, cardiotonics, antiarrhythmic agents, antianginal agents, antihypertensive agents, peripheral vasodilators and drugs used in atherosclerosis.
8. Drugs acting on the blood and blood forming organs. Haematinics, coagulants and anticoagulants, haemostatics, blood substitutes and plasma expanders.
9. Drugs affecting renal function—diuretics and antidiuretics.
10. Hormones and hormone antagonists—hypoglycemic agents, antithyroid drugs, sex hormones and oral contraceptives, corticosteroids.
11. Drugs acting on digestive system—carminatives, digestants, bitters, antacids and drugs used in peptic ulcer, purgatives, and laxatives, antidiarrohoeals, emetics, antiemetics, antispasmodics.

Unit-V

6. Chemotherapy of microbial disease: urinary antiseptics, sulfonamides, penicillins, streptomycin, tetracyclines and other antibiotics, antitubercular agents, antifungal agents, antiviral drugs, antileprotic drugs.
7. Chemotherapy of protozoal diseases, anthelminitc drugs.
8. Chemotherapy of cancer.
9. Disinfectants and antiseptics.

A detailed study of the action of drugs on each organ is not necessary.

GSP 2.3P	Pharmacology and Toxicology, Practical	50 Hrs

The first six of the following experiments will be done by the students while the remaining will be demonstrated by the teacher.

1. Effect of potassium and calcium, acetylcholine and adrenaline on frog's heart.
2. Effect of acetylcholine on rectus abdominis muscle of frog and guinea pig ileum.
3. Effect of spasmogens and relaxants on rabbits intestine.
4. Effect of local anaesthetics on rabbit cornea.
5. Effect of mydriatics and miotics on rabbit eye.
6. To study the action of strychnine on frog.
7. Effect of digitalis on frogs heart.
8. Effect of hypnotics in mice.
9. Effect of convulsants and anticonvulsants in mice or rats.
10. Test for pyrogens.
11. Taming and hypnosis potentiating effect of chlorpormazine in mice/rats.
12. Effect of diphenhydramine in experimentally produced asthma in guinea pigs.

GSP 2.4	Pharmaceutical Jurisprudence, Theory	50 Hrs

Unit-I

1. Origin and nature of pharmaceutical legislation in India, its scope and objectives. Evolution of the "Concept of Pharmacy" as an integral part of the health care system.
2. Brief introduction to the study of the following acts:
    1. Poisons Act 1919 (as amended to date)
    2. Medicinal and toilet preparations (excise duties) Act, 1955 (as amended to date). (iii)Medical termination of pregnancy act, 1971 (as amended to date).

Unit-II

3. Principles and significance of professional ethics. Critical study of the code of pharmaceutical ethics drafted by Pharmacy Council of India.
4. Pharmacy Act, 1948—the general study of the Pharmacy Act with special reference to education regulations, working of state and central councils, constitution of these councils and functions, registration procedures under the Act.

Unit-III

5. The Drugs and Magic Remedies (Objectionable Advertisement) Act, 1954—general study of the act, objectives, special reference to be laid on advertisements, magic remedies and objectionable and permitted advertisements, diseases which cannot be claimed to be cured.
6. Narcotic Drugs and Psychotropic Substances Act, 1985-a brief study of the act with special reference to its objectives, offences and punishment.

Unit-IV

7. The Drugs and Cosmetics Act, 1940—general study of the Drugs and Cosmetics Act and the rules there under. Definitions and salient features related to retail and wholesale distribution of drugs. Procedure and formalities in obtaining licences under the rule.

Unit-V

8. The powers of inspectors, the sampling procedures.
9. Facilities to be provided for running a pharmacy effectively. General study of the schedules with special reference to schedules C, C1, F, G, J, H, P and X and salient features of labeling and storage conditions of drugs.
10. Latest drugs (price control) order in force.

GSP 2.5	Drug Store and Business Management, Theory	50 Hrs

PART-I COMMERCE (50 hours)

Unit-I

1. Introduction—trade, industry and commerce, functions and subdivision of commerce, introduction to elements of economics and management.
2. Channels of distribution.
3. Drug house management—selection of site, space lay out and legal requirements. Importance and objectives of purchasing, selection of suppliers, credit information, tenders, contracts and price determination and legal requirements thereto. Codification, handling of drug stores and other hospital supplies.

Unit-II

4. Forms of business organizations.
5. Recruitment, training, evaluation and compensation of the pharmacist.
6. Banking and finance-service and functions of bank, finance planning and sources of finance.

Unit-III

7. Inventory control—objects and importance, modern techniques like ABC, VED analysis, the lead time, inventory carrying cost, safety stock, minimum and maximum stock levels, economic order quantity, scrap and surplus disposal.
8. Sales promotion, market research, salesmanship, qualities of a salesman, advertising and window display.

PART-II ACCOUNTANCY (25 hours)

Unit-IV

9. Introduction to the accounting concepts and conventions. Double entry book keeping, different kinds of accounts.
10. Cash book.

Unit-V

11. General ledger and trial balance.
12. Profit and loss account and balance sheet.
13. Simple techniques of analyzing financial statements. Introduction to budgeting.

GSP 2.6	**Hospital and Clinical Pharmacy , Theory**	**75 Hrs**

PART I Hospital Pharmacy

Unit-I

1. Hospital—definition, function, classification based on various criteria, organization, management and health delivery system in India.
2. Hospital pharmacy:
    1. Definition

2. Functions and objectives of hospital pharmaceutical services.
3. Location, layout, flow chart of materials and men.
4. Personnel and facilities requirements including equipments based on individual and basic needs.
5. Requirements and abilities required for hospital pharmacists.

3. Drug distribution system in hospitals.
    1. Out-patient services
    2. In-patient services—(a) types of services (b) detailed discussion of unit dose system, floor ward stock

system, satellite pharmacy services, central sterile services, bed side pharmacy.

Unit-II

4. Manufacturing:
    1. Economical considerations, estimation of demand.
    2. Sterile manufacture—large and small volume parenterals, facilities, requirements, layout, production planning, man-power requirements.
    3. Non-sterile manufacture—liquid orals, externals, bulk concentrates.
    4. Procurement of stores and testing of raw materials.
5. Nomenclature and uses of surgical instruments and hospital equipments and health accessories.
6. P.T.C. (Pharmacy Therapeutic Committee), hospital formulary system and their organization, functioning, composition.
7. Drug information service and drug information bulletin.
8. Surgical dressing like cotton, gauze, bandages and adhesive tapes including their pharmacopoeial tests for quality. Other hospital supply eg. I.V. sets, B.G. sets, Ryals tubes, catheters, syringes etc.

PART II CLINICAL PHARMACY:

Unit-III

9. Introduction to clinical pharmacy practice—definition, scope.
10. Modern dispensing aspects—pharmacists and patient counseling and advice for the use of common drugs, medication history.
11. Common daily terminology used in the practice of medicine.
12. Disease, manifestation and pathophysiology including salient symptoms to understand the disease like tuberculosis, hepatitis, rheumatoid arthritis, cardiovascular diseases, epilepsy, diabetes, Peptic ulcer, hypertension.
13. Bioavailability of drugs, including factors affecting it.

Unit-IV

14. Physiological parameters with their significance.
15. Drug interactions:
    1. Definition and introduction.

2. Mechanism of drug interaction.
3. Drug—drug interaction with reference to analgesics, diuretics, cardiovascular drugs, gastro intestinal agents, vitamins and hypoglycemic agents.
4. Drug-food interaction.

16. Adverse drug reactions.
    1. Definition and significance.
    2. Drug-induced diseases and teratogenicity.

Unit-V

17. Drugs in clinical toxicity—introduction, general treatment of poisoning, systemic antidotes, treatment of insecticide poisoning, heavy metal poison, narcotic drugs, barbiturate, organophosphorus poisons.
18. Drug dependences, drug abuse, addictive drugs and their treatment, complications.
19. Application of computers in maintenance of records, inventory control, medication monitoring, drug information and data storage and retrieval in hospital retail pharmacy establishment.

GSP 2.6P	Hospital and Clinical Pharmacy, Practical	75 Hrs

1. Preparation of transfusion fluids.
2. Testing of raw materials used in (1)
3. Evaluation of surgical dressings.
4. Sterilization of surgical instruments, glassware and other hospital supplies.
5. Handling and use of data processing equipments.

REFERENCE BOOKS (LATEST EDITION)

Pharmaceutics – I (GSP 101T & GSP 102P)

1. Remington's Pharmaceutical Sciences.
2. The Extra Pharmacopoeia-Martindale.

Pharmaceutical Chemistry - I (GSP 103T & GSP 104P)

1. Pharmacopoeia of India, Govt. of India, Ministry of Health, Delhi.
2. Beckett A.H. and Stenlake J.B., Practical Pharmaceutical Chemistry, Part-I, The Athlene Press University of London.
3. Chatten L.G., Pharmaceutical Chemistry, Vol. I & II, Marsccel Dekker, New York.
4. L. M. Arthadon, Benlty, T. B. of Pharmaceutical Chemistry, British Press.
5. Block J., Roche E.B., Sonie T.O., Wilson C.O., Inorganic Pharmaceutical chemistry, Lea & Febiger,

Philadelphia, PA.

6. Atherden L.M, Bentley and Driver's Text Book of Pharmaceutical Chemistry, Oxford University Press, London.
7. Jeffery G.H., Bassett J., Mendham J., Denney R.C., Volgel's Text book of quantitative chemical analysis, E.L.B.S. London.
8. Disher L. A., Modern Inorganic Pharmaceutical Chemistry.

Pharmacognosy (GSP 105T & GSP 106P)

1. Kokate C. K., Practical Pharmacognosy, Vallabh Prakashan, Delhi.
2. Kokate C. K., Purohit A. P. and Gokhale S. B., Pharmacognosy , Nirali Prakashan, Pune.
3. Tylor V. E., Brady L. R. and Robbers J. E., Pharmacognosy 1981, Learned Febiger, Philadelphe, U. S. A.
4. Trease G. E. Pharmacognosy and Evans W. C., Baillers Tindall, London.
5. Wallis T. E. Pharmacognosy, J. A. Churchill.

Biochemistry and Clinical Pathology (GSP 107T & GSP 108P)

1. Lehninger A. L., Principles of Biochemistry, CBS Publishers and Distributors, New Delhi.
2. Stryer L., Biochemistry, W H Freeman and Company, San Francisco.
3. A.V.S.S. Rama Rao, Text book of Biochemistry.
4. Conn E. E. and Stumpf P. K., Outlines of Biochemistry, John Wiley and Sons, New York.
5. Harrow B. and Mazur A., Textbook of Biochemistry, W. B. Saunders Co., Philadelphia.
6. Jayraman J., Laboratory Manual in Biochemistry, Wiley Eastern Limited, New Delhi.
7. Martin D. W., Mays P. A. and Redwell V. M., Harpers Biochemistry, Lange Medical Publications.
8. Mussay R. K., Granner D. K., Mayous P. A. and Rodwell Harpers Biochemistry, Prentice-Hall International, Inc.
9. Plumer D. T., An Introduction to Practical Biochemistry, Tata MacGraw Hill, New Delhi.

Human Anatomy and Physiology (GSP 109T & GSP 110P)

1. Derashari and Gandhi; Human Anatomy and physiology; B.S. Shah Prakashan.
2. C.C. Chatterjee; Human Physiology; Medical Alied Agency, Calcutta.
3. Goyal, Bhatt and Kumar; Basics of Health Education and Community Pharmacy; B.S. Shah Prakashan.
4. Warwick & Williman Longman; Gray's Anatomy.
5. Sahana's Text Book of Anatomy.
6. Willium and Wilkins, Baltimore Best and Taylor's Physiological Basis of Medical Practice.
7. Difore Lea SH and Febiger, Atlas of Normal Histology, Philadephia.
8. Ganong WF, Review of Medical Physiology, Prentice Hall International.
9. Chourasia B.D.; Human Anatomy, Regional and Applied. Part I, II & III; CBS Publishers and Distributor, New Delhi.
10. Gyuton A.C., Half J.E.;Text Book of Medical Physiology; WB Sannders Company.
11. Subhash Shaliya; Human Physiology; CBS Publishers and Distributors.

12. Keel C.A., Neil E and Joels N.; Samson Wright's Applied Physiology; Oxford University Press.
13. MC Naught A.B. and Callander R, Churchill Livingstone; Illustrated Physiology.
14. Ranade V.G.; Text Book of Practical Physiology; Pune Vidyarthi Griha Prakashan, Pune.
15. Tortora G.J. and Anagnodokos N.P.; Principles for Anatomy and Physiology; Harper and Row Publishers N.Y.
16. Vander A.J. Shermati J.H. and Luciano D.S.; Human Physiology; Tata Mcgraw Hill Publishing Co. New Delhi.
17. Goyal R.K.; A Text Book of Experimental Physiology; B.S. Shah Prakashan.

Health Education and Community Pharmacy (GSP 111T)

1. N.S. Parmar; Health Education and Community Pharmacy; CBS Publishers.

Pharmaceutics II (GSP 201T & GSP 202P)

1. Indian Pharmacopoeia.
2. British Pharmacopoeia.
3. National Formularies (N.F.I., B.N.P.)
4. Martindale’s Extra pharmacopoeia.
5. Carter S. J., Cooper Gunn’s Dispensing for Pharmaceutical Students, CBS Publishers, Delhi.
6. Remington’s The Science and Practice of Pharmacy, Mack Publishing Co. Easton, Pennsylvania.
7. The British Pharmaceutical Codex, The Pharmaceutical Press, London, Convention, Mack Pub Co., Easton PA.
8. Hoover J.E., Dispensing of Medication, Mack Publishing Co., Easton, Pennsylvania.
9. Martin E. W., Dispensing of Medication, Mack Publishing Co., Easton PA.

Pharmaceutical Chemistry II (GSP 203T & GSP 204P)

1. Pharmacopoeia of India.
2. British Pharmaceutical codex,
3. Martindale’s Extra pharmacopoeia.

Pharmacology & Toxicology (GSP 205T & GSP 206P)

1. Goyal R.K., Derasari & Gandhi’s Elements of Pharmacology, B. S. Shah Prakashan.
2. Satoskar & Bhandarkar, Pharmacology & Pharmacotherapeutics I & II, Popular Prakashan, Bombay.
3. Applied Therapeutics: The clinical use of Drugs, applied Therapeutics, Inc.
4. Crossland J. and Thomsen J.H.; Essential of Pharmacology; Harper & Raw Publishers NY.
5. Barar F. S. K., Essentials of Therapeutics; Interprint New Delhi.
6. Craig C. R. & Stizel R. R., Modern Pharmacology, Little Brown and Company.

7. Davidson's Principles and Practice of Medicine, ELBS/Churchill Livingstone.
8. J.G.Hardman, L.E., Limbird, P.B.Molinoss, R.W.Rudden & A. G. Gil, Goodman & Gilmans, The Pharmacological basis of Therapeutics, Pergamon Press.
9. Herindal E. T. & Hirschman J.L., Willams and Wilkins, Clinical Pharmacy and Therapeutics.
10. Katzung B. G., Basic and Clinical Pharmacology, Prentice Hall International.
11. Lawrence D.R. and Bennet P. N., Clinical Pharmacology; Churchill Livingstone.
12. Myeek M. J., Gertner S. B. & Perper M. M., Pharmacology Lippincatt's Illustrated Reviews, Lippinocott Company, Philadelphia.
13. Panl L., Chapmom and Hall, Principles of Pharmacology.
14. Dipiro, J.L.Elseuier, A Pathophysiological Approach: Phermacotherpay.
15. Rang M.P., Dale M.M., Riter J.M.,Pharmacology, Churchill Liningstone.
16. Robbinson S. L. and Kumar V.; Basic Pathology, W. B. Saunders Co.
17. Theoharides T. C., Pharmacology; Little Brown & Co.
18. Turner; Screening of drugs.
19. B. C. Bose, Pharmacology
20. James crossland, Levi's Pharmacology
21. Ghosh, Pharmacology materia medical and therapeutics.
22. Goyal R. K., Bhat R. and Burande M. K., Text Book of Clincal Pharmacy, Shah Publication.
23. Goyal R. K., Text Book of Experimental Pharmacology, Shah Publication.
24. Ghosh M.N., Fundamentals of Experimental Pharmacology, Scientific Book Agency, Calcutta.
25. Kulkarni S. K., Hand Book of Experimental Pharmacology, Vallabh Prakashan, Delhi.
26. Sharma V.N., Essentials of Pharmacology, CBS Publishers, New Delhi.

Pharmaceutical Jurisprudence (GSP 207T)

1. Bare Acts of the said laws published by Government.

Drug Store and Business Management (GSP 208T)

1. Remington's Pharmaceutical Sciences.

Hospital and Clinical Pharmacy (GSP 209T & GSP 210P)

1. Remington's Pharmaceutical Sciences
2. Martindale's Extra pharmacopoeia.