



B.Pharm(Practice)

Curriculum and Syllabus

**Effective from the Academic Year
2018-2019**

**Department of Pharmacy Practice
School of Pharmaceutical Sciences**

B.PHARM (PRACTICE)

I YEAR

Course Code	Name of the Subject	Minimum No.of total contact hours	No of contact hours/weeh	Total Credit
17PCBPP11	PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - I	40	1	5
17PCBPP12	PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - II	40	1	5
17PCBPP13	PHARMACY PRACTICE I	40	1	5
17PCBPP14	PHARMACY PRACTICE II	40	1	5
17PCBPP15	APPLIED PHARMACEUTICS	40	1	5
17PCBPP16	SOCIAL PHARMACY I	40	1	5
	CASE PRESENTATION, SEMINAR, ASSIGNMENTS	160	4	18
	TOTAL	400	10	48

II YEAR

Course Code	Name of the Subject	Minimum No.of total contact hours	No of contact hours/weeh	Total Credit
17PCBPP21	PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - III	40	1	5
17PCBPP22	PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - IV	40	1	5
17PCBPP23	PHARMACY PRACTICE III	40	1	5
17PCBPP24	PHARMACY PRACTICE IV	40	1	5
17PCBPP25	SOCIAL PHARMACY II	40	1	5
17PCBPP26	PHARMACEUTICAL JURISPRUDENCE	40	1	5
	CASE PRESENTATION, SEMINAR, ASSIGNMENTS	160	4	18
	TOTAL	400	10	48

CORE SYLLABUS

B.PHARM

PRACTICE

SYLLABUS

I YEAR

17PCBPP11 - PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - I

Course Objectives:

Upon completion of the course, the student will be able to

- (a) Understand the anatomy and physiology of the respective system
- (b) Understand the disease process
- (c) Know the signs and symptoms of the disease.
- (d) Appreciate the various therapeutic regimens with their advantages and disadvantages.

Detailed Syllabus and Lecture Schedules

1. Introduction to pathophysiology and therapeutics – scope and objectives **1 hr**
2. **Prescribing guidelines (Drug and dosage selection and dose calculation) for 4 hrs**
 - a) Pediatrics
 - b) Geriatrics
 - c) Pregnant and breast feeding women
 - d) Renally and hepatically challenged patients
3. Elements of anatomy, **etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases associated with Cardiovascular System 15 hrs**
 - (a) Hypertension
 - (b) Ischemic Heart diseases (Angina and Myocardial Infarction)
 - (c) Hyperlipidemia
 - (d) Congestive Heart Failure
 - (e) Arrhythmias
4. Elements of anatomy, **Etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases associated with Respiratory System 12 hrs**
 - (a) Asthma
 - (b) COPD
 - (c) Drug induced pulmonary diseases
5. Elements of anatomy **Etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases associated with Endocrine System 8 hrs**
 - (a) Diabetes.
 - (b) Thyroid diseases

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Understand the anatomy and physiology of the respective system
- CO2 Understand the disease process
- CO3 Know the signs and symptoms of the disease.
- CO4 Appreciate the various therapeutic regimens with their advantages and disadvantages.
- CO5 Various therapeutic regimens with their advantages and disadvantages.

REFERENCES:

Text Books

- a. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication.
- b. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange.

Reference Books

- a. Pathologic basis of disease - Robins SL, W.B.Saunderspublication.
- b. Pathology and therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hallpublication.
- c. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication.
- d. Applied Therapeutics:The clinical Use of Drugs. Lloyd Young and Koda-KimbleMA
- e. Avery's Drug Treatment, 4th Edn, 1997, Adis InternationalLimited.

17PCBPP12 - PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS - II

Course Objectives:

Upon completion of the course, the student will be able to

- (a) Understand the anatomy and physiology of respective system
- (b) Understand the disease process
- (c) Know the signs and symptoms of the disease.
- (d) Appreciate the various therapeutic regimens with their advantages and disadvantages.

Detailed Syllabus and Lecture Schedules

1. Elements of anatomy, Etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases associated with CNS **18 hr**
 - (a) Anxiety
 - (b) Depression
 - (c) Schizophrenia,
 - (d) Manic depressive disorders
 - (e) Epilepsy,
 - (f) Parkinson's disease,
 - (g) Headaches
2. Elements of anatomy, Etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases associated with GI Disorders **10 hrs**
 - (a) Dyspepsia,
 - (b) Acid Pepsin Disease,
 - (c) Inflammatory Bowel Disease.
 - (d) Liver disorders- Hepatitis, Gall stones, Alcoholic Liver Disease.
3. Elements of anatomy, etiopathogenesis, clinical manifestations and pharmacotherapeutics of diseases associated with hematological System - **12 hrs**
 - (a) Erythropoietic system – Over view, Iron deficiency anemia, Megaloblastic anemia, Sideroblastic anemia, Hemolytic anemia, Venous Thromboembolism, Arterial Thromboembolism, Drug induced blood disorders.

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Understand the anatomy and physiology of the respective system

- CO2 Understand the disease process
- CO3 Know the signs and symptoms of the disease.
- CO4 Appreciate the various therapeutic regimens with their advantages and disadvantages.
- CO5 Various therapeutic regimens with their advantages and disadvantages

REFERENCES:

Text Books

- c. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication.
- d. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange.

Reference Books

- f. Pathologic basis of disease - Robins SL, W.B.Saunderspublication.
- g. Pathology and therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hallpublication.
- h. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication.
- i. Applied Therapeutics:The clinical Use of Drugs. Lloyd Young and Koda-KimbleMA Avery's Drug Treatment, 4th Edn, 1997, Adis InternationalLimited.

17PCBPP13 – PHARMACY PRACTICE I

Course Objectives:

Upon completion of the course, the student will be able to

- (a) Understand the professional roles of pharmacists in community, hospital and clinical pharmacy areas.
- (b) Understand the professional responsibilities of the pharmacists.
- (c) Provide the intended services.

Detailed Syllabus and Lecture Schedules

Introduction to Pharmacy Practice – Definition, patient focused approach, scope/areas of practice 1 hour

1. Introduction to Clinical Pharmacy **03Hrs**
 - a) Definition, Scope, Objectives of Clinical Pharmacy Practice
 - b) International v/s National scenario
 - c) Professional responsibilities of Clinical Pharmacists.
2. Clinical Pharmacy daily activities **08 hrs**
 - a) Definition, objectives and procedures of
 - i) Ward round participation
 - ii) Treatment chart review
 - iii) Drug information
 - iv) Patient counseling
 - v) ADR monitoring and reporting
 - vi) Therapeutic drug monitoring.
 - vii) Home Medication Review
 - b) Patient Data analysis
3. Patient case history, drug therapy evaluation, identification and resolving of drug related problems.
4. Practice Management : **08 hrs**
 - a. Professional practice standards - Good Pharmacy Practice – in detail including Good storage practice, good dispensing practices, etc. (national and international scenario) (for both community and hospital pharmacy)
 - b. Pharmacy Practice Regulations (PCI), Code of Ethics for Pharmacists
 - c. SOPs, writing SOPs, Documentation, writing various record formats for community and

hospital pharmacy, validation of various processes in Hospital & Community Pharmacy.

d. Concept of Accreditation of Pharmacies

e. Validation concepts & instruments for community pharmacy and hospital pharmacy

f. Concept of Audits in community and hospital pharmacy

5. Hospital and Hospital Pharmacy Organisation **06 Hrs**
- a) Definition of Hospital, Hospital Pharmacy, Organizational Structure of Hospital, Hospital Pharmacy, professional roles and responsibilities of hospital pharmacist.
- b) Advantages, need and disadvantages/risks of Hospitalization. Nosocomial infections/HAI – worldwide scenario, statistics/prevalence, dangers, precautions to take. Problems related to hospitals, high risk environment.
- c) International scenario vs Indian Scenario of Hospital Pharmacy Practice.
- d) Hospital Pharmacy Practice - Requirements for functioning of hospital pharmacy, Qualification and experience requirements for pharmacists, work load statistics.
- e) Standards of Pharmacies in hospitals
6. Drug Committees **04 Hrs**
- Pharmacy and Therapeutics Committee, Hospital Formulary, Infection Control committee, Institutional Review Board.
7. Community Pharmacy **08 hrs**
- a) Definition, scope and professional responsibilities of community pharmacist.
- b) International scenario vs Indian Scenario of Community Pharmacy Practice
- c) Pharmacy Assistant/Technician/Salesperson – roles and responsibilities,
- d) Community pharmacist's services to other health care professionals, and to nursing homes
8. Community Pharmacy Management **04 hrs**
- Selection of site, legal requirements, procurement, storage, and inventory control, product display, finance management.

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Explain the elements of pharmaceutical care and provide comprehensive patient care services
- CO2 Interpret the laboratory results to aid the clinical diagnosis of various disorders
- CO3 Able to know the professional activities of hospital pharmacy
- CO4 Able to perform the assigned role in different committees of the Hospitals

CO5 Demonstrate knowledge of the business and professional practice management skills in community pharmacies.

REFERENCES:

- a. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia.
- b. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc.
- c. Biopharmaceutics and Applied Pharmacokinetics - Leon Shargel, Prentice Hall publication.
- d. A text book of Clinical Pharmacy Practice; Essential concepts and skills, Dr.G.Parthasarathi et al, Orient Orient Langram Pvt.Ltd.ISSBN8125026
- e. Hospital pharmacy by William .E. Hassan
- f. A text book of Hospital Pharmacy by S.H.Merchant & Dr. J.S. Qadry. Revised by R.K.Goyal & R.K.Parikh
- g. Pharmaceutical statistics- practical and clinical applications, Sanford Bolton 3rd edition, publisher Marcel Dekker Inc.NewYork.
- h. Drug Information- A Guide for Pharmacists, Patrick M Malone, Karen L Kier, JohnE Stanovich , 3rd edition, McGraw Hill Publications 2006

17PCBPP14 – PHARMACY PRACTICE II

Course Objectives:

Upon completion of the course, the student will be able to

- a) Understand the professional roles of pharmacists in community, hospital and clinical pharmacy areas.
- b) Understand the professional responsibilities of the pharmacists.
- c) Provide the intended services.

1. Hospital Pharmacy Stores Management

04 hrs

Stores Management, Drug Purchase and Procurement, Inventory Control and GPP.
Management of material and finance.

2. Drug Dispensing and Drug Distribution

08 hrs

Drug distribution – various methods, individual order method, Floor Stock Method, Unit Dose Drug Distribution Method, Drug basket method, Distribution to ICCU/ICU/Emergency wards, Automated drug dispensing systems and devices , Distribution of Narcotic and Psychotropic substances , GPP associated with all these.

3. Central Sterile Supply Services

02 hrs

4. Prescription and prescription handling

05 hrs

- a. Definition, Parts of prescriptions, good prescribing practices, legality of prescriptions, identification of drug related problems in prescriptions.
- b. Prescription handling, labeling of dispensed medications (Main label, Ancillary label, pictograms), Medication usage instructions.
- c. Good dispensing practices
- d. Drug Interactions (Drug-Drug, Drug-Food, Drug-Lab investigations) –types, interpretation and detection, prevention, Practice on market prescriptions, Use of drug interaction software's.
- e. PPIs – (Patient Package Insert) - Basic concept, Importance and beneficial use of PPIs. Scenario in India and other countries.

5. Pharmaceutical Care

02 hrs

Definition, principles and procedures of pharmaceutical care

6. Patient Counseling

04 hrs

Definition, various stages of patient counseling, barriers in counseling and strategies to overcome

barriers in patient counseling. Patient information leaflets- definition, layout and design of PILs.

7. Health Screening Services

04 hrs

Definition, scope, and uses of health screening services, procedures involved in screening blood

pressure, capillary blood glucose, body mass index

8. Interpretation of laboratory data

10 hrs

a) Haematological, Liver function, Renal function, thyroid function tests

b) Tests associated with cardiac disorders

c) Fluid and electrolyte balance

d) Microbiological culture sensitivity tests

e) Pulmonary Function Tests

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

CO1 Able to manage pharmacy stores and perform ABC Analysis to maintain inventory in hospital pharmacy.

CO2 Perform and analyse prescription auditing and follow good dispensing practices

CO3 Analyze the practice involved in Clinical Pharmacy Services including clinical discussion

CO4 Able to perform health screen services for the patient approaching hospitals

CO5 Interpret the laboratory results to aid the clinical diagnosis of various disorders

REFERENCES:

- a. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia.
- b. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc.
- c. Biopharmaceutics and Applied Pharmacokinetics - Leon Shargel, Prentice Hall publication.
- d. A text book of Clinical Pharmacy Practice; Essential concepts and skills, Dr.G.Parthasarathi et al, Orient Orient Langram Pvt.Ltd.ISSBN8125026
- e. Hospital pharmacy by William .E. Hassan

- f. A text book of Hospital Pharmacy by S.H.Merchant & Dr. J.S. Qadry. Revised by R.K.Goyal & R.K.Parikh
- g. Pharmaceutical statistics- practical and clinical applications, Sanford Bolton 3rd edition, publisher Marcel Dekker Inc.NewYork.
- h. Drug Information- A Guide for Pharmacists, Patrick M Malone, Karen L Kier, JohnE Stanovich , 3rd edition, McGraw Hill Publications2006

17PCBPP15 – APPLIED PHARMACEUTICS

Course Objectives

Upon completion of the course, the student shall be able to—

- a) Understand the formulation principles of various dosage forms
- b) Understand the basic principles of stability, storage and administration of various dosage forms
- c) Learn about novel drug delivery systems
- d) Understand various pharmacokinetic pathways and optimize the drug therapy.
- e) Understand Pro Drugs concept.

Lecture wise program and detailed syllabus

1. Introduction to Pharmaceutical Dosage Forms **1 hr**
2. Basics of GMP, GLP, QA, QC **1 hr**
3. Study the following about all dosage forms **15 hrs**
 - a. Need, advantage, disadvantages
 - b. Brief of various ingredients used and need for these, basic properties of actives. Basic overview of manufacturing without going into details.
 - c. Storage, packaging requirements
 - d. Possible stability and defects issues
 - e. Proper use, special precautions while using, instructions to patients
 - f. Bioavailability/biopharmaceutics aspects
4. Introduction to Novel drug delivery systems, instructions to be given to patients
Transdermal, infusion pumps, genetically engineered medicines, etc. **6 hrs**
5. Introduction to Bio-Pharmaceutics **1 hr**
6. Absorption of drugs **3 hrs**
 - a) Introduction to absorption, structure and physiology of cell membrane
 - b) Factors affecting drug absorption, Absorption of drugs from extra vascular routes.
7. Distribution of Drugs **2 hrs**
 - a) Tissue permeability of drugs, Physiological barriers to drug distribution.
 - b) Factors affecting drug distribution.
 - c) Volume of drug distribution, Drug protein, drug tissue binding.
8. Biotransformation of drugs **3 hrs**
 - a) Drug metabolizing organs and Enzymes
 - b) Phase I reactions, Phase II reactions

c) Factors affecting biotransformation of the drugs

- 9. Excretion of drugs** **1 hr**
Renal excretion of drugs, **Factors affecting the renal filtration**,
Non renal routes of drug excretion
- 10. Prodrugs** **1 hr**
a) Definition and applications of prodrugs
- 11. Bioavailability and Bioequivalence** **4 hrs**
a) Definition of bioavailability and bioequivalence
b) Factors affecting bioavailability.
c) Importance of BA, BE, BA Classification system, NTI drugs, care to be taken in prescribing and dispensing of such drugs

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Explain the formulation development, storage conditions and special precautions of different dosage forms
- CO2 Describe the basics of GLP, GMP, QA and QC procedures
- CO3 Discuss in brief Novel Drug Delivery System and their development to improvement of bioavailability.
- CO4 Demonstrate various process of ADME, factors affecting ADME and their importance.
- CO5 Apply the knowledge to develop prodrugs. Outline the study of bioavailability, bioequivalence, and NTI drugs.

REFERENCES:

Text Books

- a. Cooper and Gunns Dispensing for pharmacy students.
- b. A text book Professional Pharmacy by N. K. Jain and S. N. Sharma.
- c. D.M. Brahmanekar and Sunil B Jaiswal. Text Book of Biopharmaceutics and Pharmacokinetics— A treatise. Vallabh Prakashan. Delhi.

Reference Books

- a) Introduction to Pharmaceutical dosage forms by Howard C. Ansel.
- b) Remington's Pharmaceutical Sciences

17PCBPP16 – SOCIAL PHARMACY I

Course Objectives:

Upon completion of the course, the student will be able to

- a) Understand the **social responsibility of the pharmacists** in the society
- b) Understand the health policies
- c) **Provide health care services to patients.**

Detailed syllabus and topics

1. Introduction to Social Pharmacy –
 - a) Definition and Scope - Introduction to Social Pharmacy as a discipline and its various concepts. Sociological Understanding of Health and Illness, **Role of Pharmacist in Public Health** **1hr**
 - b) WHO Definition of health – various dimensions of health **1 hr**
 - c) Introduction and broad overview of health systems, infrastructure, and functioning in India and other countries – both in Public and private sector. National health programmes in India – brief study of these and the **role of pharmacist in each of these.** **5 hrs**
2. Drugs, Industry & Policies **7 hrs**
 - a. Drugs and developed countries, developing countries, GATT, patents, Patents Act.
 - b. **Pharmaceutical Industry and its activities**, Classification systems of drugs, Social marketing – brief study of organizations and functioning like Medicines Sans Frontiers
 - c. Concept of RUM, WHO Essential Medicines, Irrational medicine use and its associated problems, etc., **Evidence based medicine**, STGs (Standard Treatment Guidelines)
 - d. National Drug Policy, National Health Policy, **Pharmacy & Drug Ethics**
3. Pharmacoeconomics – Definition, types of pharmacoeconomic models, consumption of drugs, pharmaceutical pricing and reimbursement, Health Insurance **3 hrs**
4. Pharmacoepidemiology – Definition, scope, **advantages** and **disadvantages.** **3 hrs**
5. Health Promotion and Health education **20 hrs**
 - a) Epidemiology of Communicable Diseases : Causative agents and Clinical presentations and **Role of Pharmacist in prevention of communicable diseases :**
 - (i) Respiratory infections – chickenpox, measles, rubella, mumps, influenza (including Avian-Flu,

H1N1), diphtheria, whooping cough, meningococcal meningitis, acute respiratory infections, tuberculosis

(ii) Intestinal infections – poliomyelitis, viral hepatitis, cholera, acute diarrhoeal diseases, typhoid, food poisoning, amebiasis, worm infestations

(iii) Arthropod-borne infections - dengue, malaria, filariasis and, chikungunya

(iv) Zoonoses – rabies, yellow fever, Japanese encephalitis, plague, human salmonellosis, rickettsia diseases, taeniasis, hydatid disease, leishmaniasis

(v) Surface infections – trachoma, tetanus, leprosy, STDs, HIV/AIDS

(vi) Emerging and reemerging infectious diseases.

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

CO1 Define social pharmacy, health, health system, infrastructure and functions in india and other countries

CO2 Describe drugs, industries, policies, concept of RUM, WHO essential medicines, irrational medicines, Evidence based medicines, STGs, national health policy and National drug policy.

CO3 Discuss in brief Pharmacoeconomics, consumption, types, pricing, reimbursement and health insurance.

CO4 Explain Pharmacoepidemiology and their scope, advantage and disadvantages.

CO5 Apply the knowledge to develop health promotion and health education for communicable diseases and Outline the study of causative agents and clinical presentations and role of pharmacist in prevention of communicable diseases.

REFERENCES:

Text books (Theory)

1. Social Pharmacy – Innovation and development ed. Geoff Harding, Sarah Nettleton and Kevin Taylor.
The Pharmaceutical Press.
2. Text Book of Community Pharmacy Practice. RPSGB Publication

II YEAR

17PCBPP21 - PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS –

III

Course Objectives:

Upon completion of the course, the student will be able to

- (a) Understand the anatomy and physiology of the respective system
- (b) Understand the disease process
- (c) Know the signs and symptoms of the disease.
- (d) Appreciate the various therapeutic regimens with their advantages and disadvantages

Detailed syllabus and Lecture wise schedules

1. Infectious diseases: **25 hrs**
 - (a) Guidelines for the rational use of antibiotics and surgical Prophylaxis.
 - (b) Pathophysiology and Pharmacotherapeutics of Tuberculosis, Meningitis, Respiratory tract infections, Gastroenteritis, Endocarditis, Septicemia, Urinary tract infections, Protozoal infection- Malaria, HIV & Opportunistic infections, Fungal infections, Viral infections, Gonorrhoea and Syphilis
2. Musculoskeletal disorders **08 Hrs**
 - (a) Basics of Anatomy and physiology of musculoskeletal system.
 - (b) Pathophysiology and Pharmacotherapeutics of Rheumatoid arthritis, Osteoarthritis, Gout, Spondylitis, Systemic Lupus Erythematosus
3. Renal system **07 Hrs**
 - a) Basics of anatomy and physiology of Renal system
 - b) Pathophysiology and pharmacotherapeutics of Acute Renal Failure, Chronic Renal Failure, Renal Dialysis, Drug induced renal disorders

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

CO 1 : Chart the rational use of antibiotics and surgical prophylaxis

CO2 : Explain the pathophysiology and pharmacotherapeutics of infectious disease

CO3: Discuss the basics of anatomy and physiology of musculo skeletal system

CO4: Explain the pathophysiology and pharmacotherapeutics of certain muslo skeletal disorders

CO5: Explain the basics of anatomy and physiology of renal system and elaborate the pharmacotherapeutics of renal disorders.

REFERENCES:

Text Books

- e. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication.
- f. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange.

Reference Books

- j. Pathologic basis of disease - Robins SL, W.B.Saunderspublication.
- k. Pathology and therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hallpublication.
- l. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication.
- m. Applied Therapeutics:The clinical Use of Drugs. Lloyd Young and Koda-KimbleMA
- n. Avery's Drug Treatment, 4th Edn, 1997, Adis InternationalLimited.

17PCBPP22 - PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS –

IV

Objectives:

Upon completion of the course, the student will be able to :

- a) Understand the anatomy and physiology of the respective system
- b) Understand the disease process
- c) Know the signs and symptoms of the disease.
- d) Appreciate the various therapeutic regimens with their advantages and disadvantages

Detailed Syllabus and Lecture Wise Program

1. Oncology 15 Hrs
Basic principles of Cancer therapy,
General introduction to cancer chemotherapeutic agents,
Chemotherapy of breast cancer, leukemia.
Management of chemotherapy induced nausea and emesis
2. Dermatology 7 Hrs
(a) **Pathophysiology and Pharmacotherapeutics** of
Psoriasis, Scabies, Eczema, Impetigo
3. Women's Health 10 Hrs
(a) Physiology of Menstrual Cycle
(b) Contraception – **Physical Methods, Chemical Methods, IUDs, and Permanent methods.**
(c) Disorders related to Menstrual Cycle – Polycystic ovary Syndrome, Dysmenorrhea, Premenstrual Syndrome.
(d) Obstetric Drug Therapy – Trimesters of Pregnancy, Common complaints of Pregnancy and their management – nausea, vomiting, reflux esophagitis, Diabetes mellitus, Hypertension and Preeclampsia, FDA Categorisation of drugs in Pregnancy
(e) Menopause – **signs and symptoms and Management**
4. Elements of anatomy and Physiology of Vision **Etiopathogenesis, diagnostic techniques, clinical manifestations and pharmacotherapeutics of diseases** associated with Eye such as
(a) Glaucoma
(b) Infectious ophthalmic diseases 8hrs

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Identify the clinical signs and symptoms of selected disease states
- CO2 Explain the pathophysiology of selected disease states
- CO3 Justify the diagnosis arrived based on investigations ordered
- CO4 Develop individualized therapeutic plans based on diagnosis
- CO5 Identify the patient-specific parameters relevant in initiating drug therapy and monitoring therapy

REFERENCES:

Text Books

- g. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone publication.
- h. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange.

Reference Books

- o. Pathologic basis of disease - Robins SL, W.B.Saunderspublication.
- p. Pathology and therapeutics for Pharmacists: A Basis for Clinical Pharmacy Practice - Green and Harris, Chapman and Hallpublication.
- q. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication.
- r. Applied Therapeutics:The clinical Use of Drugs. Lloyd Young and Koda-KimbleMA
- s. Avery's Drug Treatment, 4th Edn, 1997, Adis InternationalLimited.

17PCBPP23 – PHARMACY PRACTICE III

Course Objectives:

Upon completion of the course, the student will be able to

- a. Understand the professional roles of pharmacists in community, hospital and clinical pharmacy areas.
- b. Understand the professional responsibilities of the pharmacists.
- c. Provide the intended services.

Detailed syllabus and Lecture wise program

- | | |
|---|---------------|
| 1. Drugs and Poison Information | 06 hrs |
| (a) Introduction to drug information resources available | |
| (b) Systematic approach in answering DI queries | |
| (c) Critical evaluation of drug information and literature | |
| (d) Preparation of written and verbal reports | |
| (e) Establishing a Drug Information Centre | |
| f) Poisons information- organization & information resources | |
| (g) Drug Information Bulletin | |
| 2. Pharmacovigilance | 05 hrs |
| (a) Scope, definition and aims of Pharmacovigilance | |
| (b) Adverse drug reactions - Classification, mechanism, predisposing factors, causality assessment [different scales used] | |
| (c) Reporting, evaluation, monitoring, preventing & management of ADRs | |
| (d) Role of pharmacist in management of ADR. | |
| 3. Medication Errors - classification, consequences, prevention, and role of Pharmacist. Dispensing errors, and ways to minimize them. | 03 hrs |
| 4. Medication adherence - Consequences on non-adherence, role of pharmacist methods to improve adherence, compliance aids | 03 hrs |
| 5. Communication skills – verbal, written, Body language | 03 hrs |
| 6. OTC medications – definition, need, and role of Pharmacist. OTC medications in India, counseling for OTC products. Self medication and role of pharmacist in promoting safe self-medication. | 02 hrs |
| 7. Responding to symptoms/minor ailments | 10 hrs |
| Relevant pathophysiology, common non-pharmacological and OTC drug therapy, and referral to doctor – in :Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, | |

constipation), Worm infestations, Pyrexia, Ophthalmic symptoms, URT infections, skin disorders, oral and dental disorders.

8. **Hospital supplies** **7 hrs**
- a. Surgical items/supplies – catheters, syringes & needles, I.v. sets, Ryle's tubes, Study of Woundmanagement, stoma and incontinence products, Surgical dressing like cotton, gauze, bandages and adhesive tapes,
 - b. sutures, ligatures,
 - c. patient care equipment – nebulizers, thermometers, .
9. Veterinary Pharmacy – introduction and **Role of pharmacist in procurement and distribution of veterinary medicines** **4 hrs**

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Describe the professional roles of pharmacists in community areas.
- CO2 Explain the professional responsibilities of the pharmacists.
- CO3 Discuss the intended services.
- CO4 Describe the professional roles of pharmacists in hospital areas
- CO5 Describe the professional roles of pharmacists in clinical pharmacy areas.

REFERENCES:

- a. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia.
- b. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc.
- c. Biopharmaceutics and Applied Pharmacokinetics - Leon Shargel, Prentice Hall publication.
- d. A text book of Clinical Pharmacy Practice; Essential concepts and skills, Dr.G.Parthasarathi et al, Orient Orient Langram Pvt.Ltd.ISSBN8125026
- e. Hospital pharmacy by William .E. Hassan

17PCBPP24 – PHARMACY PRACTICE IV

Course Objectives:

Upon completion of the course, the student will be able to

- a) Understand the professional roles of pharmacists in community, hospital and clinical pharmacy areas.
- b) Understand the professional responsibilities of the pharmacists.
- c) Provide the intended services.

Detailed syllabus and lecture wise program

1. Health Accessories **05 Hrs**
Study and handling of various common health accessories handled in hospital and community pharmacy. Student should have working knowledge, uses and cautions in using these. (Wheel Chairs, Canes, Crutches, and other orthopedic aids, Bed Pans, Vaporizers, Syringes and Needles, Hot water Bottles, Clinical Thermometers, Trusses, First Aid Supplies, Family Medicine Cabinet, etc.
2. Medical gases – different gases and their use, coding and care of cylinders, delivery of gases to various parts of hospital, domiciliary oxygen services, and role of pharmacist **03 hrs**
3. I.V admixture services and role of Pharmacist **03 hrs**
4. Total Parenteral Nutrition – Definition, composition and clinical use of TPN **02 hrs**
5. Clinical Research - 12 hrs
Introduction to Clinical trials
Various phases of clinical trial.
Methods of post marketing surveillance
Abbreviated New Drug Application submission
Good Clinical Practice – ICH, GCP,
- Central drug standard control organisation (CDSCO) guidelines, Schedule Y
-Composition, responsibilities, procedures of IRB / IEC
Role and responsibilities of clinical trial personnel as per ICH GC
 - a. Sponsor
 - b. Investigators
 - c. Clinical research associate
 - d. Auditors
 - e. Contract research coordinators

f. Regulatory authority

Designing of clinical study documents (protocol, CRF, ICF, PIC with assignment)

Informed consent Process

6. Introduction to Biostatistics **03hrs**
7. Research in pharmacy practice areas.
8. Continuing education for pharmacists **01 hr**
9. **Compounding of Pharmaceuticals in the hospital/community pharmacy.** Weights and measures, **calculations involving percentage solutions**, allegation, proof spirit, Isotonic solutions. Bulk compounding in hospitals, pre-packaging. **03Hr**
10. **Manufacturing of Pharmaceutical Formulations in hospital** – various aspects, current status **03 hrs**
11. **Radiopharmaceuticals – Handling and Packaging, clinical usage, and role of pharmacist** **02 hrs**
12. **Applications of IT and computers in pharmacy practice** **02 hrs**
13. Provision of cytotoxic chemotherapy, and various considerations/handling. Handling of cytotoxic waste and disposal. **Pharmaceutical (Medicines and allied products) waste management** in hospitals, community pharmacy, and the community and the role of the pharmacist. **03 hrs**
14. Medical Devices & I.V. pumps
15. Individualised medicines, Gene therapy, Genomics & proteomics, Biochips, biosensors and MEMS micro electro mechanical systems

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO1 Describe the professional roles of pharmacists in community areas.
- CO2 Explain the professional responsibilities of the pharmacists.
- CO3 Discuss the intended services.
- CO4 Describe the professional roles of pharmacists in hospital areas
- CO5 Describe the professional roles of pharmacists in clinical pharmacy areas.

REFERENCES:

- a. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia.
- b. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc.

- c. Biopharmaceutics and Applied Pharmacokinetics - Leon Shargel, Prentice Hall publication.
- d. A text book of Clinical Pharmacy Practice; Essential concepts and skills, Dr.G.Parthasarathi et al, Orient Orient Langram Pvt.Ltd.ISSBN8125026
- e. Hospital pharmacy by William .E. Hassan

17PCBPP25 – PHARMACEUTICAL JURISPRUDENCE

Course Objectives:

Upon completion of the course the student shall be able to

1. Understand various concepts of the pharmaceutical legislation in India
2. Know various rules drafted in Drug and Cosmetic Act, Pharmacy Act, NDPS Acts, relevant to pharmacy practice.
3. Know the Consumer Protection Act, PFA Act, DPCO,.
4. Understand the labeling requirements and packaging guidelines for drugs and cosmetics

Detailed syllabus and Lecture wise Program

1. A brief review of Pharmaceutical legislations. **01 hr**
A Study of various pharmaceutical and related legislations with more emphasis on aspects relevant to community & hospital pharmacy practice in India. Study the aspects only from practical angle, with examples, case studies, etc :
2. Drugs and Cosmetics Act-1940 and Rules 1945 **15 hrs**
 - Duties & Responsibilities of Drug Inspectors, other officers, and obligations of the pharmacy to them
 - Brief about DTAB, DCC, Drug testing laboratories
 - Various drug licences for retail pharmacy, requirements to start a pharmacy/medical store, application forms, issue of licence, display of licences, duration of licences, laws related to stocking, handling and sale of drugs and devices
 - Various schedules under the Act & Rule – study in brief –those relevant to pharmacy practice
 - Labelling requirements of drugs – various aspects
 - Spurious, misbranded, adulterated, counterfeit drugs – various aspects related to this, how to recognize, role of the pharmacist
 - Import of drugs for personal use
 - Various documents to be maintained under the Act & Rules by a pharmacy
 - Storage requirements, handling expired goods
 - Various punishments under the Act
 - Practical study of Prescription and non-prescription drugs, market samples, examine for labeling, etc.
 - Laws relating to various traditional systems/ medicines approved in India
 - Banning of drugs

3. Pharmacy Act – 1948	03 hrs
4. Medicinal and Toilet Preparation Act-1955	04 hrs
5. Narcotic Drugs and Psychotropic Substances Act – 1985	04 hrs
6. Drugs and Magic Remedies (Objectionable Advertisements) Act and Rules, 1954	02 hrs
7. Essential Commodities Act	02 hrs
8. Drugs Prices Control Order	02hrs.
9. Prevention of Cruelty to Animals Act, 1960	02 hrs
10. Consumer Protection Act , 1986	02 hrs
11. Prevention of Food Adulteration Act & Rules, laws relating to Dietary Supplements, Food supplements, etc	02 Hrs
12. The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Amendment Act, 2003	02 Hrs

COURSE OUTCOME: (Employability).

At the end of the course, the student will be able to

- CO.1 Defend Professional ethics
- CO.2 Understood the various concepts of the Pharmaceutical Legislation in India.
- CO.3 Justify the various parameters in the Drug and Cosmetic Act and rules.
- CO.4 Explain the various concepts of Drug policy, DPCO, Patent and Designing act.
- CO.5 Express about the salient features of different laws which have been prescribed by the Pharmacy Council of India from time to time including International Laws.

REFERENCES:

Text books (Theory)

- a. Mithal , B M. Textbook of Forensic Pharmacy. Calcutta :National; 1988.

Reference books (Theory)

- a. Singh, KK, editor. Beotra's the Laws of Drugs, Medicines & cosmetics. Allahabad: Law Book House;1984.
- b. Jain, NK. A Textbook of forensic pharmacy. Delhi: Vallabh prakashan ;1995.
- c. Reports of the Pharmaceutical enquiry Committee
- d. I.D.M.A., Mumbai. DPCO1995
- e. Various reports of Amendments.
- f. Deshapande, S.W. The drugs and magic remedies act 1954 and rules 1955. Mumbai: Susmit Publications;1998.
- g. Eastern Book Company .The narcotic and psychotropic substances act 1985, Lucknow: Eastern;1987.

17PCBPP26 – SOCIAL PHARMACY II

Course Objectives:

Upon completion of the course, the student will be able to

- a. Understand the social responsibility of the pharmacists in the society
- b. Provide professional services to the patients.

Syllabus and lecture wise programme

A. Preventive care:

1. Vaccines, and immunizations – and Role of Pharmacist **2 hrs**
2. Role of Pharmacist in Demography & Family Planning **2 hrs**
3. Mother and child health, importance of breastfeeding, ill effects of formula foods and bottle feeding, and role of Pharmacist **4 hrs**
4. Geriatrics and role of Pharmacist **1 hr**
5. Effect of Environment on Health & Role of Pharmacist – Water pollution, safe supply of water. **1 hr**
6. Occupational diseases/illnesses and Role of Pharmacist **1 hr**
7. Mental Health and role of Pharmacist **1 hr**
8. Psychosocial Pharmacy : Drugs of misuse and abuse – psychotropic and narcotics, and other pharmaceuticals and chemicals, tobacco and tobacco products, alcohol. Social & psychosocial impact of these, role of pharmacist in reducing, preventing the menace. Tobacco cessation and role of pharmacist **3 hrs**
9. Palliative/terminal care and role of pharmacist in handling psychosocial issues **3 hrs**
10. Care for disabled and role of pharmacist in handling psychosocial issues **2 Hrs**
11. Early intervention in hereditary diaseses, screening tests **1 hr**

B. Nutrition and health :

20 Hrs

1. Basics of nutrition – Macronutrients and Micronutrients, fibre – importance, sources (Plant and animal origin),
2. Calorific and nutritive values of various foods
3. Daily/recommended dietary allowance and functions of each. Balanced diets – for various individual groups. Nutrition deficiency diseases
4. Food as a medicine. Brief study of various concepts of Naturopathy.
5. Nutrition as per Ayurveda – Ayurvedic outlook to diets – as per prakruti, seasons, seasonal availability of foods, etc. Prakruti study in brief.

6. Wrong/improper foods and food habits, causes of various disease conditions, ill effects of wrong foods/fast foods, timed foods, etc – Western foods as well as Indian foods – reasons for wrong effects on body.

7. **Basics of genetically modified foods** – advantages, disadvantages

8. **Effects of environment on foods**, artificial ripening, hybridization, use of pesticides, adulteration, etc.

9. **Nutrition/dietary recommendation for different disease conditions** – e.g. diabetes, blood pressure, Hyperlipidemia, arthritis, renal disease, liver disease, allergies, etc.

10. Artificial sweeteners, zero calorie concept, glycemic index of foods

11. Dietary supplements, nutraceuticals, food supplements – legal standing, indications, rational use, benefits, ADRs, **Drug Interactions**, pharmacoeconomics.

C. **First Aid Services in Community Pharmacy**

10 hrs

COURSE OUTCOME: **(Employability).**

At the end of the course, the student will be able to

CO1 Understand the social responsibility of the pharmacists in the society

CO2 Understand the first aid services to be provided in community pharmacy

CO3 Provide professional services to the patients

CO4 Provide patients/public education about health and precautions for staying healthy

CO5 Improve their professional image as a Pharmacist

REFERENCES:

Text books (Theory)

1. Social Pharmacy – Innovation and development ed. Geoff Harding, Sarah Nettleton and Kevin Taylor.
The Pharmaceutical Press.
2. Text Book of Community Pharmacy Practice. RPSGB Publication