

Department of Drug Chemistry
Syllabus of III Year Diploma
Program (UG) Title of Program:
Medicinal Chemistry

Year	Semester	Course No.	Course Code	Contact Hours	Credits (1Credit=15 H)	Total Marks	
2	I	DT I	DDCT 501	30	2	75	
		DL I	DDCL 501	60	2	75	
	II	DT II	DDCT 602	30	2	75	
		DL II	DDCL 602	60	2	75	
	Annual	DP I	DDCP 501	30	1	50	
	Industrial and or Incubation and or Research and or Field Training				30	1	-
	Total				240	10	350

D: Diploma, *: Departmental Code (D: Drug, C: Chemistry, MI: Microbiology, CSE: Computer Science (Entire), etc.)

C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Courses: 6 (Theory: 02, Practical: 02, Project: 01)

Theory and Practical: Semester, Project: Annual

Semester I

DT-I: DDCT 501: Medicinal Chemistry I
(Contact Hrs. 30 Credits: 2)

Learning Objectives:

Students will be able to learn

1. Antibiotics along with their mode of action.
2. Mechanism of drug resistance

Unit I: Antibiotic Drugs

(15)

Definition, Sources, Characteristics and properties, classification of antibiotics based on spectrum activity, absorability, mechanism of actions with examples: bacterial cell wall synthesis inhibitors, beta lactam antibiotics, Cephalosporin, Cycloserin. Modulators in the function and permeability of the cell membrane: Plobymaxins, polyenes, azoles. Protein synthesis inhibitors: translation and transcription, nucleic acid synthesis inhibitors: Inhibition of precursor synthesis, inhibition of RNA synthesis.

Unit II: Antibiotic Resistance

Introduction, Description, Classification, Acquired resistance, intrinsic resistance, origin of drug

resistance, (Non-genetic and genetic), Mechanism that mediate bacterial resistance to drug, Factors affecting drug resistance,

Learning Outcomes:

After completion of the unit, Student will be able to learn

1. Define antibiotics and classify according to mode of action.
2. Explain antibiotic resistance in detail.

Reference Books:

1. Foye's Principles of Medicinal Chemistry W. O. Foye, Lippincott Williams & Wilkins, 6th edition, 2008.
2. Textbook Of Medicinal And Pharmaceutical Chemistry Wilson And Gisvold, Lippincott Williams & Wilkins, Philadelphia,11
3. The Organic Chemistry of Drug Synthesis (Vol. 1-6) Daniel Lednicer John Wiley & Sons INC 1999
4. The Organic Chemistry of Drug Design and Drug Action. R. B. Silverman Elsevier Publication 2

DL-I: DDCL 102: Basic Medicinal Chemistry Practicals

(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to-

1. Handle microscope.
2. Study activities of antibiotics.

List of Practical's

1. To study Gram nature of bacterial cells in given suspensions.
2. To observe morphology of given bacterial by negative staining method.
3. To prepare a smear of given bacterial suspension and observe the morphology of bacterial cell by monochrome staining method.
4. To observe antibiotic activity of given antibiotics.(4)

Learning Outcomes:

After completion of the unit, Students will be able to understand

1. Differentiate gram positive and gram negative bacteria's.

2. Handle and prepare smear of bacterial suspension.

References:-

1. Indian Pharmacopoeia
2. United States pharmacopoeia
3. British pharmacopoeia

Semester II DT-II:
DDCT 603: Medicinal Chemistry II
(Contact Hrs. : 30 Credits: 2)

Learning Objectives:

Students will be able to

1. Get inform about various fungal infections.
2. Know various antimalarial drugs.

Unit I: Antifungal Drugs

(15)

Introduction to class fungi, characteristics, classification, fungal infections, sites of infections, target involve in the infection, current therapies for the treatment, mode of action of drug, adverse effect of drugs, selection of the drugs, synergistic effect of drug,.

Unit II: Antimalarial drugs

Introduction, causes, types of malaria, symptoms, pathological detection, life cycle of parasite, chemotherapies of malaria, classification of antimalarial drug based on life cycle of parasite: prophylactic agents, suppressive agents, curative agents, gamatocidal agents, sprantocidal agents, mode of action of drug, side effect of drugs, chemical classification of antimalarial drug: cinchona alkaloids, 4 amino quinolone, 8 amino acridine, by guanidine, pyrimidine, sulphones, miscellaneous compounds, current therapies used for treatment.

Learning Outcomes:

After completion of the unit, Student will able to-

1. Know about antifungal drug.
2. Explain mode of action antimalarial durgs.

Reference Books:

1. Foye's Principles Of Medicinal Chemistry W. O. Foye, Lippincott Williams & Wilkins, 6th edition, 2008.
2. Textbook Of Medicinal And Pharmaceutical Chemistry Wilson And Gisvold, Lippincott Williams & Wilkins, Philadelphia,11
3. Burger's Medicinal Chemistry & Drug Discovery(Vol. 1- 6) A. Burger And M.E. Wolff; John Wiley & Sons-New Jersey, 6th edition, 2003
4. Pharmaceutical Substances: Synthesis, Patents, Applications (N-Z) Kleemann Georg ThiemeVerlag-Stuttgart. Thieme, 4th edition, 2001
5. The Organic Chemistry of Drug Synthesis (Vol. 1-6) Daniel Lednicer John Wiley & Sons INC 1999
6. The Organic Chemistry of Drug Design And Drug Action. R. B. Silverman Elsevier Publication 2
7. Organic Synthesis-The Disconnection Approach, S Warren, John Wiley & Sons- Chichester, 2

**DL-II: DDCL604: Medicinal Chemistry II Practical's
(Contact Hrs. : 60 Credits: 02)**

Learning Objectives

Students will be able to-

1. Know preparation of antifungal cream.
2. Study estimation of aldehyde, protein and Vit-C
3. Test ninhydrin in amino acids
4. Get knowledge about preparation and evaluation of various pharmaceutical products

List of Practical's

1. Preparation of antifungal ointment.
2. Preparation of antifungal cream.
3. Synthesis of quinolone
4. Synthesis of 1,3 pyrazole
5. synthesis of 2,3 biphenyl quinoxiline
6. Synthesis 1,3 Azoles

Learning Outcomes:

After completion of the unit, Student will able to

1. Prepare Aspirin from salicylic acid
2. Estimate aldehyde in various oil
3. Analyze various cosmetic products by using various instruments
4. Understand processes involved in preparation and evaluation of various pharmaceutical products

Reference Books:

1. Pharmacopoeias
2. Burger's Medicinal Chemistry & Drug Discovery(Vol. 1- 6) A. Burger And M.E. Wolff; John Wiley & Sons-New Jersey, 6th edition, 2003

3. Pharmaceutical Production Facilities: Design and Applications G.C.Cole
4. New York Ellis Horwood 1990
5. Husa's Pharmaceutical Dispensing Martin E. W. Easton Mack Pub. Co. 1971
6. Transdermal Delivery of Drug A. Kydonieus Florida, CRC Press, 1987
7. Transdermal Controlled System Medications Y. W. Chien, New York, Marcel Dekker 1987
8. The Theory and Practice of Industrial Pharmacy, Lachman Bombay, K. M. Warghese Co. 1976
9. The Theory and Practice of Industrial Pharmacy, Lachman Bombay, K. M. Warghese Co. 1976
10. Pharmaceutical Dosage Forms Vol. I & II, Liebermann, New York, Marcel Dekker, 1996.
11. Drug Delivery Devices: Fundamentals and Applications, Tyle New York, Marcel Dekker 1988

DP-I: DDCP 105: Project
(Contact Hrs. 60, Credits: 2)

Industrial and or Incubation and or Research and or Field Training
(Contact Hrs. 60, Credits: 2)

BOS Sub-Committee

1. Dr. P. A. Bharad (Chairman)
2. Dr. A. R. Mali (Member)

Expert Committee

1. Name of Academic Expert- Dr. Suhit Gilda
2. Name of Industrial Expert- Dr. Ashok Ravalekar