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Course Plan

Program- B. Pharm

Semester- II

Course-Human anatomy and Physiology-II

Course Code- BP-201 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Nervous system: Organization of nervous system,	1	0	0	1
3.	D+2	Neuron, neuroglia	1	0	0	1
4.	D+3	Classification and properties of nerve fibre,	1	0	0	1
5.	D+4	Electrophysiology,	1	0	0	1
6.	D+5	Action potential, nerve impulse	1	0	0	1
7.	D+6	Receptors, synapse	1	0	0	1
8.	D+7	Neurotransmitters	1	0	0	1

9.	D+8	Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid,	1	0	0	1
10.	D+9	Structure and functions of brain (cerebrum, brain stem, cerebellum.	1	0	0	1
11.	D+10	Spinal cord (gross structure, functions oand efferent nerve tracts, reflex activity.	1	0	0	1
TOTAL			**10**	**0**	**0**	**10**
12.	D+11	Anantomy and functions of stomach, small intestine and large intestine,	1	0	0	1
13.	D+12	Anatomy and functions of salivary glands	1	0	0	1
14.	D+13	Pancreas and liver, movements of GIT,	1	0	0	1
15.	D+14	Digestion and absorption of nutrients and disorder of GIT,	1	0	0	1
16.	D+15	Formation and role of ATP,	1	0	0	1
17.	D+16	Creatinine phosphate and BMR	1	0	0	1
TOTAL			**06**	**0**	**0**	**06**
22.	D+17	Respiratory system: Anatomy of lungs ,	1	0	0	1
23.	D+18	Mechanism of respiration,	1	0	0	1
24.	D+19	Regulation of respiration,	1	0	0	1
25.	D+20	Lungs volume and capacities transport of respiratory gases,	1	0	0	1
26.	D+21	Artificial respiration and resuscitation methods,	1	0	0	1
27.	D+22	Anatomy of kidney and nephrons,	1	0	0	1
28.	D+27	Functions of kidney and urinary tract,	1	0	0	1
29.	D+23	Physiology of urine formation,	1	0	0	1
30.	D+24	Micturition reflex and role of kidney in acid base balance,	1	0	0	1

31.	D+25	Role of RAS in kidney and disorder of kidney,	1	0	0	1
		TOTAL	**10**	**0**	**0**	**10**
32.	D+26	Endocrine system: Introduction and functions of endocrine system	1	0	0	1
33.	D+27	Classification of hormones,	1	0	0	1
34.	D+28	Mechanism of hormones action,	1	0	0	1
35.	D+29	Structure and functions of pituitary gland,	1	0	0	1
36.	D+30	Thyroid gland.	1	0	0	1
37.	D+31	Parathyroid gland,	1	0	0	1
38.	D+32	Adrenal gland,	1	0	0	1
39.	D+33	Pancreas	1	0	0	1
40.	D+34	Pineal gland	1	0	0	1
41.	D+35	Thymus and their disorder	1	0	0	1
TOTAL			**10**	**10**	**0**	**10**
42.	D+36	Reproductive system: Anatomy of male and female reproductive system,	1	0	0	1
43.	D+37	Functions of male and female reproductive system,	1	0	0	1
44.	D+38	Sex hormones,	1	0	0	1
45.	D+39	Physiology of menstruation,	1	0	0	1
46.	D+40	Fertilization,	1	0	0	1
47.	D+41	Spermatogenesis,	1	0	0	1
48.	D+42	Oogenesis, pregnancy and parturition,	1	0	0	1
49.	D+43	Chromosomes, genes and DNA,	1		0	1
50.	D+44	Protein synthesis , genetic pattern of inheritance	1	0	0	0

TOTAL	**09**	**1**	**0**	**09**

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Course Plan

Program- B. Pharm

Semester- II

Course-Human anatomy and Physiology-II

Course Code- BP-207 (P)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	To study the integumentary and special senses using specimen, models.	0	0	4	4
3	D+2	To study the nervous system using specimen, models.	0	0	4	4
4	D+3	To study the endocrine system using specimen, models.	0	0	4	4

5	D+4	To demonstrate the function of olfactory nerve.	0	0	4	4
6	D+5	To examine the different types of taste.	0	0	4	4
7	D+6	To demonstrate the reflex activity.	0	0	4	4
8	D+7	Recording of body temperature.	0	0	4	4
9	D+8	To demonstrate positive and negative feedback mechanism.	0	0	4	4
10	D+9	Determination of tidal volume and vital capacity.	0	0	4	4
11	D+10	To study of digestive system with the help of models, chart and specimen.	0	0	4	4
12	D+11	To study of cardiovascular system with help of models, chart and specimen	0	0	4	4
13	D+12	To study of urinary system with the help of models, chart and specimen.	0	0	4	4
14	D+13	Recording of basal mass index.	0	0	4	4
15	D+14	Study of pregnancy diagnosis test.	0	0	4	4
		TOTAL	**0**	**0**	**56**	**56**

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Lesson Plan

Program: Bachelor of Pharmacy **Semester:II**

Course: Pharmaceutical Organic Chemistry- l **Course Code: BP-202 T**

Session: 2021-2022

S no.	Day	Subject	L	T	P	Total
1.	D+1	**Classification, nomenclature and isomerism:** Introduction of Organic Compounds	1	0	0	1
2.	D+2	Classification of Organic Compounds	1	0	0	1
3.	D+3	Common and IUPAC systems of nomenclature of organic compounds (up to 10 Carbons open chain and carbocyclic compounds)	1	0	0	1
4.	D+4	Discussion Session/ Revision/Class Test	0	1	0	1
5.	D+5	Nomenclature of Alkanes, Alkenes and Alkynes	1	0	0	1
6.	D+6	Rules for IUPAC Nomenclature	1	0	0	1
7.	D+7	Nomenclature for Functional groups	1	0	0	1
8.	D+8	Discussion Session/ Revision/Class Test	0	1	0	1
9.	D+9	Nomenclature of oxirans ,Nomenclature of aldehyde	1	0	0	1
10	D+10	Structural Isomerism in Organic compounds	1	0	0	1
11	D+11	Types of structural isomerism	1	0	0	1
12	D+12	Discussion Session/ Revision/Class Test	0	1	0	1
13	D+13	Revision for Nomenclature	1	0	0	1

14	D+14	Revision for isomerism	1	0	0	1
15		Total	11	3	0	14
16	D+15	Alkanes, Alkenes	1	0	0	1
17	D+16	Discussion Session/ Revision/Class Test	0	1	0	1
18	D+17	Conjugated dienes	1	0	0	1
19	D+18	SP3 hybridization in alkanes	1	0	0	1
20	D+19	Halogenation of alkanes	1	0	0	1
21	D+20	Discussion Session/ Revision/Class Test	0	1	0	1
22	D+21	uses of paraffins	1	0	0	1
23	D+22	Stabilities of alkenes	1	0	0	1
24	D+23	E1 and E2 reactions	1	0	0	1
25	D+24	Discussion Session/ Revision/Class Test	0	1	0	1
26	D+25	Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement	1	0	0	1
27	D+26	Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes	1	0	0	1
28	D+27	Anti Markownikoff's orientation	1	0	0	1
29	D+28	Discussion Session/ Revision/Class Test	0	1	0	1
30		Total	10	4	0	14
31	D+29	Alkyl halides	1	0	0	1

32	D+30	SN1 and SN2 reactions	1	0	0	1
33	D+31	kinetics, order of reactivity of alkyl halides	1	0	0	1
34	D+32	Discussion Session/ Revision/Class Test	0	1	0	1
35	D+33	stereochemistry and rearrangement of carbocations	1	0	0	1
36	D+34	SN1 versus SN2 reactions	1	0	0	1
37	D+35	Factors affecting SN1 and SN2 reactions	1	0	0	1
38	D+36	Discussion Session/ Revision/Class Test	0	1	0	1
39	D+37	Structure and uses of ethylchloride	1	0	0	1
40	D+38	Alcohols	1	0	0	1
41	D+39	Qualitative tests	1	0	0	1
42	D+40	Discussion Session/ Revision/Class Test	0	1	0	1
43	D+41	Structure and uses of Ethyl alcohol	1	0	0	1
44		Total	10	3	0	13
45	D+42	Carbonyl compounds	1	0	0	1
46	D+43	Aldehydes and ketones	1	0	0	1
47	D+44	Discussion Session/ Revision/Class Test	0	1	0	1
48	D+45	Nucleophilic addition	1	0	0	1
49	D+46	aldol condensation	1	0	0	1
50	D+47	Cannizzaro reaction	1	0	0	1

51	D+48	Discussion Session/ Revision/Class Test	0	1	0	1
52	D+49	Benzoin condensation	1	0	0	1
53	D+50	qualitative tests	1	0	0	1
54	D+51	Structure and uses of Formaldehyde	1	0	0	1
55	D+52	Discussion Session/ Revision/Class Test	0	1	0	1
56.		Total	8	3	0	11
57.	D+53	Carboxylic acids	1	0	0	1
58.	D+54	Acidity of carboxylic acids	1	0	0	1
59.	D+55	qualitative tests for carboxylic acids ,amide and ester	1	0	0	1
60.	D+56	Discussion Session/ Revision/Class Test	0	1	0	1
61.	D+57	Structure and Uses of Acetic acid	1	0	0	1
62.	D+58	Methyl salicylate and Acetyl salicylic	1	0	0	1
63.	D+59	Salicylic acid and Benzoic acid	1	0	0	1
64.	D+60	Discussion Session/ Revision/Class Test	0	1	0	1
65.	D+61	Aliphatic amines	1	0	0	1
66.	D+62	Basicity, effect of substituent on Basicity	1	0	0	1
67.	D+63	Qualitative test, Structure and uses of Ethanolamine	1	0	0	1
		Total	9	2	0	11

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Lab Practical Lesson Plan

Program: Bachelor of Pharmacy **Semester: II Semester**
Course: Pharmaceutical Organic Chemistry-I **Course Code: BP-208 P**
Session: 2021-2022

S no.	Day	Objective	L	T	P	Total
1.	D+1	Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.	0	0	4	4
2.	D+2	Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.	0	0	4	4
3.	D+3	Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne's test	0	0	4	4
4.	D+4	Solubility test	0	0	4	4
5.	D+5	Functional group test of Phenols, Amides/ Urea	0	0	4	4
6.	D+6	Functional group test of Amines, Carboxylic acids	0	0	4	4
7.	D+7	Functional group test of Aldehydes and Ketones	0	0	4	4
8.	D+8	Functional group test of Alcohols, Esters	0	0	4	4
9.	D+9	Melting point of organic compounds	0	0	4	4
10.	D+10	Boiling point of organic compounds	0	0	4	4
11.	D+11	Identification of the unknown compound from the literature using melting point.	0	0	4	4
12.	D+12	Identification of the unknown compound from the literature boiling point.	0	0	4	4
13.	D+13	Preparation of the derivatives and confirmation of the unknown compound by melting point.	0	0	4	4
14.	D+14	Preparation of the derivatives and confirmation of the unknown compound by boiling point.	0	0	4	4
15.	D+15	2 unknown organic compounds to be analysed systematically	0	0	4	4
16.	D+16	Preparation of suitable solid derivatives from organic compounds	0	0	4	4
17.		TOTAL	0	0	64	64

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Course Plan

Program- B. Pharm

Semester-II[st]

Course-Biochemistry

Course Code- BP-203 T

Session - 2022-23

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Introduction and scope of Biochemistry and Biomolecules	1	0	0	1
3.	D+2	**C**lassification, chemical nature and biological role of Carbohydrates, Lipids	1	0	0	1
4.	D+4	**C**lassification, chemical nature and biological role of Nucleic acids and Amino acids.	1	0	0	1
5.	D+5	**C**lassification, chemical nature and biological role of Proteins. **Bioenergetics:** Concept of free energy	1	0	0	1
6.	D+6	**C**lassification, chemical nature and biological role of endergonic and exergonic reaction	1	0	0	1
7.	D+7	Relationship between free energy, enthalpy and entropy; Redox potential	1	0	0	1
8.	D+8	Energy rich compounds, classification; biological significances of ATP and Cyclic AMP	1	0	0	1
9.	D+9	Tutorial (Problem solving session/ class test)	0	1	0	1

TOTAL			**9**	**1**	**4**	**8**
10.	D+10	**Carbohydrate metabolism:** Glycolysis – Pathway, energetics and significance	1	0	0	1
11.	D+11	Citric acid cycle- Pathway, energetics and significance	1	0	0	1
12.	D+12	HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase(G6PD) deficiency	1	0	0	1
13.	D+13	Glycogen metabolism Pathways and glycogen storage diseases (GSD)Gluconeogenesis- Pathway and its significance	1	0	0	1
14.	D+14	Tutorial (Problem solving session/ class test)	0	1	0	1
15.	D+15	Hormonal regulation of blood glucose level and Diabetes mellitus	1	0	0	1
16.	D+16	**Biological oxidation:** Electron transport chain (ETC) and its mechanism	1	0	0	1
17.	D+17	Oxidative phosphorylation & its mechanism and substrate phosphorylation	1	0	0	1
18.	D+18	Inhibitors ETC and oxidative phosphorylation/Uncouplers level	1	0	0	1
19.	D+19	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
20.	D+20	**Lipid metabolism:** β-Oxidation of saturated fatty acid (Palmitic acid)	1	0	0	1
21.	D+21	Formation and utilization of ketone bodies; ketoacidosis, De novo synthesis of fatty acids (Palmitic acid)	1	0	0	1
22.	D+22	Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D	1	0	0	1
23.	D+23	Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.	1	0	0	1
24.	D+24	Tutorial (Problem solving session/ class test)	0	1	0	1
25.	D+25	**Amino acid metabolism:** General reactions of amino acid metabolism: Transamination, deamination & decarboxylation	1	0	0	1
26.	D+26	Urea cycle and its disorders Catabolism of phenylalanine and tyrosine and their metabolic disorders	1	0	0	1
27.	D+27	Dopamine, noradrenaline, adrenaline Catabolism of heme; hyperbilirubinemia and jaundice	1	0	0	1

28.	D+28	(Phenyketonuria, Albinism, alkeptonuria, tyrosinemia) Synthesis and significance of biological substances; 5-HT, melatonin,	1	0	0	1
29.	D+29	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**8**	**2**	**0**	**10**
30.	D+30	**Nucleic acid metabolism and genetic information transfer**	1	0	0	1
31.	D+31	Biosynthesis of purine and pyrimidine nucleotides	1	0	0	1
32.	D+32	Catabolism of purine nucleotides and Hyperuricemia and Gout disease	1	0	0	1
33.	D+33	Structure of DNA and RNA and their functions	1	0	0	1
34.	D+34	Tutorial (Problem solving session/ class test)	0	1	0	1
35.	D+35	DNA replication (semi conservative model)	1	1	0	1
36.	D+36	Transcription or RNA synthesis	1	0	0	1
37.	D+37	Genetic code, Translation or Protein synthesis and inhibitors	1	0	0	1
38.	D+38	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**7**	**2**	**0**	**09**
39.	D+39	**Enzymes:** Introduction, properties, nomenclature and IUB classification of enzymes	1	0	0	1
40.	D+40	Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)	1	0	0	1
41.	D+41	Enzyme inhibitors with examples	1	0	0	1
42.	D+42	Tutorial (Problem solving session/ class test)	0	1	0	1
43.	D+43	Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation	1	0	0	1
44.	D+44	Therapeutic and diagnostic applications of enzymes and isoenzymes Coenzymes –Structure and biochemical functions	1	0	0	1
45.	D+45	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**5**	**2**	**0**	**07**

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Course Plan

Program- B. Pharm

Semester- II

Course-BIOCHEMISTRY

Course Code- BP-209 (P)

Session - 2022-23

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	To perform the identification test for carbohydrates(Sucrose)	0	0	4	4
3	D+2	To perform the identification test for carbohydrates(Lactose)	0	0	4	4
4	D+3	To perform the identification test for carbohydrates(Starch)	0	0	4	4
5	D+4	To analyse the sample of saliva	0	0	4	4
6	D+5	To perform the identification test for carbohydrates(Glucose)	0	0	4	4
7	D+6	To perform the identification test for protein(colour test)	0	0	4	4
8	D+7	To perform the physical examination of urine	0	0	4	4

9	D+8	To estimate creatinine in given sample of blood	0	0	4	4
10	D+9	To estimate blood sugar level in a given sample of blood	0	0	4	4
11	D+10	Determination of serum total cholesterol	0	0	4	4
12	D+11	To preparation of carbonate bicarbonate buffer of pH 10.2	0	0	4	4
13	D+12	To study of enzymatic hydrolysis of starch	0	0	4	4
14	D+13	To determination of salivary amylase activity	0	0	4	4
					52	**52**

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- II
Course- PATHOPHYSIOLOGY
Course Code- BP204T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	**Basic principles of Cell injury and Adaptation:** Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury,	1	0	0	1
3	D+2	Pathogenesis (Cell membrane damage, Mitochondrial damage,Ribosome damage, Nuclear damage),	1	0	0	1
4	D+3	Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia)	1	0	0	1
5	D+4	Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage	1	0	0	1
6	D+5	Cell Death Acidosis & Alkalosis, Electrolyte imbalance.	1	0	0	1
7	D+6	**Basic mechanism involved in the process of inflammation and repair**:Introduction, Clinical signs of inflammation	1	0	0	1
8	D+7	Different types of Inflammation, Mechanism of Inflammation	1	0	0	1
9	D+8	Alteration in vascular permeability and blood flow, migration of WBC's,	1	0	0	1
10	D+9	Mediators of inflammation, Basic principles of wound healing in the skin,	1	0	0	1
11	D+10	Pathophysiology of Atherosclerosis.	1	0	0	1
		TOTAL	**10**	**0**	**0**	**10**
12	D+11	**Cardiovascular System:**Hypertension,	1	0	0	1
13	D+12	congestive heart failure, ischemic heart disease	1	0	0	1
14	D+13	angina, myocardial infarction, atherosclerosis	1	0	0	1

15	D+14	Respiratory system: Asthma,	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	Chronic obstructive airways diseases.	1	0	0	1
18	D+17	Renal system: Acute failure	1	0	0	1
19	D+18	chronic renal failure	1	0	0	1
20	D+19	arteriosclerosis isomers	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	**08**	**2**	**0**	**10**
22	D+21	**Hematological Diseases:** Iron deficiency**,**	1	0	0	1
23	D+22	Classification of Heterocyclic compounds	1	0	0	1
24	D+23	megaloblastic anemia (Vitamin B12 and folic acid), sickle cell anemia,	1	0	0	1
25	D+24	thalassemia, hereditary acquired anemia, hemophilia.	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	Endocrine system: Diabetes,	1	0	0	1
28	D+27	thyroid diseases, disorders of sex hormones	1	0	0	1
29	D+28	Nervous system: Epilepsy, Parkinson's disease,	1	0	0	1
30	D+29	stroke, psychiatric disorders: depression, schizophrenia	1	0	0	1
31	D+30	Alzheimer's disease. Gastrointestinal system: Peptic Ulcer.	1	1	0	1
		TOTAL	**09**	**1**	**0**	**10**
32	D+31	Inflammatory bowel diseases,	1	0	0	1
33	D+32	jaundice, hepatitis (A, B, C, D, E, F) alcoholic liver disease	1	0	0	1
34	D+33	Disease of bones and joints: Rheumatoid arthritis	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	osteoporosis and gout.	1	0	0	1
37	D+36	Principles of cancer: classification	1	0	0	1
	D+37	etiology and pathogenesis of cancer.	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		**TOTAL**	**06**	**02**	**0**	**08**
40	D+39	**Infectious diseases: Meningitis,**	1	0	0	1
41	D+40	Typhoid, Leprosy	1	0	0	1

42	D+41	Tuberculosis, Urinary tract infections.	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1
44	D+43	Sexually transmitted diseases: AIDS	1	0	0	1
45	D+44	Syphilis	1	0	0	1
46	D+45	Gonorrhea.	1	0	0	1
		TOTAL	**06**	**1**	**0**	**7**

Signature

Faculty

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Course Plan

Program- B. Pharm

Semester-II

Course-COMPUTER APPLICATIONS IN PHARMACY

Course Code- BP-205 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Number system: Binary number system, Decimal number system, Octal number system, Hexadecimal number systems	1	0	0	1
3.	D+2	Conversion decimal to binary, binary to decimal, octal to binary, binary addition, binary subtraction.	1	0	0	1
4.	D+3	One's complement, Two's complement Method, binary multiplication, binary division.	1	0	0	1
5.	D+4	Concept of information Systems and Software: Information gathering, requirement.	1	0	0	1
6.	D+5	feasibility analysis, data flow diagrams, process specifications	1	0	0	1
7.	D+6	input/output design, process Life cycle, planning and managing the project.	1	0	0	1
TOTAL			**06**	**0**	**0**	**06**
8.	D+7	Web technologies: Introduction to HTML	1	0	0	1
9.	D+8	XML, CSS and Programming languages	1	0	0	1

10.	D+9	Introduction to web servers and Server Products.	1	0	0	1
11.	D+10	Introduction to databases	1	0	0	1
12.	D+11	MYSQL, MS ACCESS	1	0	0	1
13.	D+12	Pharmacy Drug database.	1	0	0	1
TOTAL			**6**	**0**	**0**	**06**
14.	D+13	**Application of computers in Pharmacy –** Drug information storage and retrieval	1	0	0	1
15.	D+14	Pharmacokinetics, Mathematical model in Drug design	1	0	0	1
16.	D+15	Hospital and Clinical Pharmacy	1	0	0	1
17.	D+16	Electronic Prescribing and discharge (EP) systems	1	0	0	1
18.	D+17	barcode medicine identification and automated dispensing of drugs	1	0	0	1
19.	D+18	Mobile technology and adherence monitoring.	1	0	0	1
20.	D+19	Diagnostic system. Lab-diagnostic System	1	0	0	1
21.	D+20	Patient Monitoring System, Pharma Information System.	1	0	0	1
		TOTAL	**8**	**0**	**0**	**08**
22.	D+21	Bioinformatics: Introduction	1	0	0	1
23.	D+22	Objective of Bioinformatics	1	0	0	1
24.	D+23	Bioinformatics Databases,	1	0	0	1
25.	D+24	Concept of Bioinformatics	1	1	0	1
26.	D+25	impact of Bioinformatics in Vaccine Discovery	1	0	0	1
27.	D+26	impact of Bioinformatics in Vaccine Discovery	1	0	0	1
TOTAL			**6**	**0**	**0**	**06**
28.	D+27	Computers as data analysis in Preclinical development	1	0	0	1
29.	D+28	Chromatographic dada analysis	1	0	0	1

30.	D+29	Laboratory Information management System	1	0	0	1
31.	D+30	LIMS	1	0	0	1
32.	D+31	Text Information Management System (TIMS)	1	0	0	1
33.	D+32	Text Information Management System (TIMS)	1	0	0	1
TOTAL			**6**	**0**	**0**	**06**

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Course Plan

Program- B. Pharm

Semester- II

Course-COMPUTER APPLICATIONS IN PHARMACY

Course Code- BP-210 (P)

Session –2021-22

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	Design a questionnaire using a word processing package to gather information about a particular disease.	0	0	2	2
3	D+2	Create a HTML web page to show personal information.	0	0	2	2
4	D+3	Retrieve the information of a drug and its adverse effects using online tools.	0	0	2	2
5	D+4	Creating mailing labels Using Label Wizard, generating label in MS WORD.	0	0	2	2
6	D+5	Create a database in MS Access to store the patient information with the required fields using access.	0	0	2	2
7	D+6	Design a form in MS Access to view, add, delete and modify the patient record in the database.	0	0	2	2
8	D+7	Generating report and printing the report from patient database.	0	0	2	2

9	D+8	Creating invoice table using – MS Access	0	0	2	2
10	D+9	Drug information storage and retrieval using MS Access	0	0	2	2
11	D+10	Creating and working with queries in MS Access.	0	0	2	2
12	D+11	Exporting Tables, Queries, Forms and Reports to webpages	0	0	2	2
13	D+12	Exporting Tables, Queries, Forms and Reports to XMLpages.	0	0	2	2
		TOTAL	**0**	**0**	**26**	**26**

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- II[nd]
Course-ENVIRONMENTAL SCIENCE
Course Code- BP-206T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day	The Multidisciplinary nature of environmental studies				
2	D+1	Natural Resources	1	0	0	1
3	D+2	Renewable and non-renewable resources	1	0	0	1
4	D+3	Natural resources and associated problems	1	0	0	1
5	D+4	Forest resources	1	0	0	1
6	D+5	Water resources	0	1	0	1
7	D+6	Mineral resources	1	0	0	1

8	D+7	Food resources	1	0	0	1
9	D+8	Energy resources, land resources	1	0	0	1
10	D+9	Role of an individual in conservation of natural resources.	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	Ecosystems	1	0	0	1
13	D+12	Concept of an ecosystem	1	0	0	1
14	D+13	Structure and function of an ecosystem	1	0	0	1
15	D+14	Introduction, types of ecosystem	1	0	0	1
16	D+15	characteristic features	0	1	0	1
17	D+16	structure and function of the ecosystems	1	0	0	1
18	D+17	Forest ecosystem, Grassland ecosystem, Desert ecosystem	1	0	0	1
19	D+18	Aquatic ecosystems (ponds, streams, lakes)	1	0	0	1
20	D+19	Aquatic ecosystems (rivers, oceans, Estuaries)	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	Environmental Pollution	1	0	0	1
23	D+22	Classification of pollutants	1	0	0	1
24	D+23	Air pollution and its sources	1	0	0	1
25	D+24	Prevention method of air pollution	1	0	0	1
26	D+25	Water pollution ,Sources of water polltuion	0	1	0	1
27	D+26	Prevention of water pollution	1	0	0	1
28	D+27	Soil pollution	1	0	0	1
29	D+28	Sources of soil pollution	1	0	0	1
30	D+29	Prevention method of soil pollution	1	0	0	1

31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- IVth
Course- PHARMACEUTICAL ORGANIC CHEMISTRY-lll
Course Code- BP 401T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	**Stereo isomerism General introduction**	1	0	0	1
3	D+2	Optical isomerism:- optical activity, enantiomerism, diastereroisomerism, chiral and achiral compounds	1	0	0	1
4	D+3	DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers	1	0	0	1
5	D+4	Reaction of chiral molecules	1	0	0	1
6	D+5	Problem Solving Session/ class test	0	1	0	1
7	D+6	Racemic modification	1	0	0	1
8	D+7	Resolution of racemic mixture	1	0	0	1
9	D+8	Asymmetric synthesis: partial	1	0	0	1
10	D+9	Asymmetric synthesis: absolute	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	Geometrical isomerism introduction	1	0	0	1
13	D+12	Nomenclature of geometrical isomerism (cis, trans, EZ,	1	0	0	1

		syn anti systems)				
14	D+13	Methods of determination of configuration of geometrical isomers.	1	0	0	1
15	D+14	Conformational isomerism in Ethane, n-butane and Cyclohexane	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	Stereo isomerism in biphenyl compounds (Atropisomerism)	1	0	0	1
18	D+17	conditions for optical activity	1	0	0	1
19	D+18	Stereoselectivereactions	1	0	0	1
20	D+19	Stereospecific reactions	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	**Heterocyclic compounds:** Nomenclature	1	0	0	1
23	D+22	Classification of Heterocyclic compounds	1	0	0	1
24	D+23	Synthesis, reactions and medicinal uses of pyrrole	1	0	0	1
25	D+24	Synthesis, reactions and medicinal uses of Furan	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	Synthesis, reactions andmedicinaluses of thiophene	1	0	0	1
28	D+27	Relative aromaticity and reactivity of pyrrole	1	0	0	1
29	D+28	Relative aromaticity andreactivity of Furan	1	0	0	1
30	D+29	Relative aromaticity and reactivity of Thiophene	1	0	0	1
31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
32	D+31	Synthesis, reactions and medicinal uses of pyrazole and imidazole, Indole	1	0	0	1
33	D+32	Synthesis, reactions and medicinal uses of Thiazole and Oxazole , Acridine	1	0	0	1
34	D+33	Synthesis, reactions and medicinal uses of pyridine, quinoline, isoquinoline	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	Basicity of pyridine and synthesis and medicinal uses of pyrimidine	1	0	0	1
37	D+36	Synthesis and medicinal uses of purine and their derivatives	1	0	0	1
	D+37	Synthesis and medicinal uses of azepines and their derivatives	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		TOTAL	06	02	0	08

40	D+39	**Reactions of synthetic importance** Metal hydride reduction , Clemmensen reduction	1	0	0	1
41	D+40	Birch reduction wolff kishner reduction	1	0	0	1
42	D+41	Oppenauer-oxidation and Dakin reaction	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1
44	D+43	Beckmann's Rearrangement and Schmidt rearrangement	1	0	0	1
45	D+44	Claisen-Schmidt condensation	1	0	0	1
46	D+45	Problem Solving session / class test	0	1	0	1
		TOTAL	05	2	0	7

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Course Plan

Program- **BACHELOR OF PHARMACY**
Semester- IVth
Course-MEDICINAL CHEMISTRY
Course Code- BP 402T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	Introduction to medicinal chemistry	1	0	0	1
3	D+2	History and development of medicinal chemistry	1	0	0	1
4	D+3	Physiochemical properties in relation to biological action Ionization and solubility	1	0	0	1
5	D+4	Partition coefficient, Hydrogen Bonding, Protein binding	1	0	0	1
6	D+5	Problem Solving Session/ class test	0	1	0	1
7	D+6	Chelation and Bioisosterism	1	0	0	1
8	D+7	Optical and Geometrical isomerism	1	0	0	1
9	D+8	Drug metabolism principles-phase I and II	1	0	0	1
10	D+9	Factors affecting drug metabolism including stereo chemical aspects	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	**Cholinergic neurotransmitters:** Biosynthesis and catabolism of acetylcholine	1	0	0	1
13	D+12	Cholinergic receptors (Muscarinic and Nicotinic) and their distribution	1	0	0	1
14	D+13	**Parasympathomimetic agents: SAR of parasympathomimetic agents & direct acting**	1	0	0	1

		agents:acetylcholine, carbachol, bethanechol, Methacholine, Pilocarpine				
15	D+14	**Indirect acting/cholinesterase inhibitors (Reversible & irreversible):** physostigmine, neostigmine, pyridostugmine, epdrophonium chloride , ambenonium chloride, Isoflurophate, echothiophate	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	Cholinesterase reactivator: Pralidoxime chloride	1	0	0	1
18	D+17	**Cholinergic Blocking agents:SAR of cholinolytic agents**	1	0	0	1
19	D+18	Solanaceous alkaloids and analogues and related drugs	1	0	0	1
20	D+19	**Synthetic cholinergic blocking agents and their related drugs**	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	**Drugs acting on Autonomic Nervous System Adrenergic Neurotransmitter:** Biosynthesis and catabolismof catecholamine	1	0	0	1
23	D+22	Adrenergic receptors Alpha and their distribution	1	0	0	1
24	D+23	Adrenergic receptors Beta and their distribution	1	0	0	1
25	D+24	**Sympathomimetics agents: SAR of Sympathomimeticsagents** Direct acting:-Nor-epinephrine, Epinephrine, phenylephrine, Dopamine, methyldopa, clonidine, dobutamine, salbutamol	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	**Indirect acting agents:** Hydroxyamphetamine, pseudoephedrine, propylhexedrine	1	0	0	1
28	D+27	**Adrenergic Antagonists:** **Alpha adrenergic blockers:**Tolazoline, phentolamine , phenoxybenzamine, Prazosin, Dihydroergotamine, Methylsergide	1	0	0	1
29	D+28	**Agents with mixed mechanism:** Ephedrine, Metaraminol	1	0	0	1
30	D+29	**Beta adrenergic blockers:**SAR of beta blockers, propranolol, metibranolol, atenolol, Betazolol, Esmolol,labetolol,carvedilol, Bisoprolol	1	0	0	1
31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
32	D+31	**Drugs acting on Central Nervous System** **Sedative and Hypnotics:** **Benzodiazepines and barbiturtes related drugs**	1	0	0	1
33	D+32	**Miscellaneous:** Amides & Imides: Glutethmide Alcohol & their carbamate derivatives: Meprobamate, Ethchlorvynol Aldehyde & their derivatives: Triclofos sodium, paraldehyde	1	0	0	1

34	D+33	**Antipsychotic** **Phenothiazines: Its SAR and related drugs**	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	**Ring Analogues of Phenothiazeines and its related drugs** flurobuterophenones its drugs Beta amino ketones and its related drugs Benzamides: sulpieride	1	0	0	1
37	D+36	**Anticonvulsants:** SAR and MOA of anticonvulsants **Barbiturates:**Phenobarbitone, Methabarbital **Hydantoins:** Phenytoin,mephenytoin, ethotoin	1	0	0	1
	D+37	**Succinimides:** phensuximide, methsuximide, ethosuximide **Urea and monoacylureas:** Phenacemide, Carbamazepine **Benzodiazepines:** clonazepam **Miscellaneous:** primidone, valporic acid, Gabapentin, Felbamate	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		TOTAL	06	02	0	08
40	D+39	**Drugs acting on CNS** **General anesthesics:** **Inhalation anesthetics and** Its related drugs **Ultra short acting barbitutrates:**Methohexital sodium, Thiamylal sodium, thiopental sodium **Dissociative anesthetics:** ketamine hydrochloride	1	0	0	1
41	D+40	**Narcotic and non-narcotic analgesics** **Morphine and related drugs**	1	0	0	1
42	D+41	**Narcotic antagonists:**Nalorphine hydrochloride, Levallorphan tartrate, Naloxone hydrochloride	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1
44	D+43	**Anti- inflammatory agents:** sodium salicylate, Aspirin, mefenamic acid, meclofenamate, indomethacin, sulindac, tometin	1	0	0	1
45	D+44	Naproxen, piroxicam, phenacetin, acetaminophen, antipyrine, phenylbutazone	1	0	0	1
46	D+45	Problem Solving session / class test	0	1	0	1
		TOTAL	05	2	0	7

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- IVth
Course-MEDICINAL CHEMISTRY-I
Course Code- BP 406 P
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	To prepare and submit benzimidazole and calculate it's percentage yield.	0	0	4	4
3	D+2	To prepare and submit benzocaine and calculate it's percentage yield.	0	0	4	4
4	D+3	To prepare and submit phenytoin and calculate it's percentage yield.	0	0	4	4
5	D+4	To prepare and submit aspirin and calculate it's percentage yield.	0	0	4	4
6	D+5	To prepare and submit ibuprofen and calculate it's percentage yield.	0	0	4	4

7	D+6	To prepare and submit phenothiazine.	0	0	4	4
8	D+7	To prepare and submit 1,3-pyrazole and calculate it's percentage yield.	0	0	4	4
9	D+8	To prepare and submit chlorpromazine and calculate its percentage yield.	0	0	4	4
10	D+9	To perform the assay of aspirin.	0	0	4	4
11	D+10	To preform the assay of ibuprofen.	0	0	4	4
12	D+11	To perform the assay of chlorpromazine.	0	0	4	4
13	D+12	To determination of partition cofficient of any two drug.	0	0	4	4
		TOTAL	0	0	48	48

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LessonPlan

Program:Bachelorof Pharmacy **Semester: VII**
SemesterCourse:Physical Pharmaceutics- II[nd] **CourseCode:BP-403TSession:2021-2022**

Sno.	Day	Subject	L	T	P	Total
1.	D+1	**Colloidal dispersions**	1	0	0	1
2.	D+2	Classification of dispersed systems	1	0	0	1
3.	D+3	General characteristics of dispersed system	1	0	0	1
4.	D+4	DiscussionSession/Revision/ClassTest	0	1	0	1
5.	D+5	size & shapes of colloidal particles	1	0	0	1
6.	D+6	classification of colloids	1	0	0	1
7.	D+7	comparative account and general properties of colloids	1	0	0	1
8.	D+8	Optical and kinetic properties	0	1	0	1
9.	D+9	electrical properties	1	0	0	1
10	D+10	coacervation	1	0	0	1
11	D+11	peptization& protective action	1	0	0	1
12	D+12	DiscussionSession/Revision/ClassTest	0	1	0	1
13		Total	9	3	0	12
14	D+13	**Rheology**	1	0	0	1

15	D+14	Newtonian systems	1	0	0	1
16	D+15	law of flow	1	0	0	1
17	D+16	DiscussionSession/Revision/ClassTest	0	1	0	1
18	D+17	kinematic viscosity, effect of temperature	1	0	0	1
19	D+18	non-Newtonian systems, pseudoplastic, dilatant	1	0	0	1
20	D+19	plastic, thixotropy, thixotropy in formulation,	1	0	0	1
21	D+20	DiscussionSession/Revision/ClassTest	0	1	0	1
22	D+21	determination of viscosity, capillary	1	0	0	1
23	D+22	falling Sphere, rotational viscometers	1	0	0	1
24	D+23	DiscussionSession/Revision/ClassTest	0	1	0	1
25	D+24	**Deformation of solids**	1	0	0	1
26	D+25	Plastic and elastic deformation	1	0	0	1
27	D+26	Heckel equation, Stress, Strain, Elastic Modulus	1	0	0	1
28	D+27	DiscussionSession/Revision/ClassTest	0	1	0	1
29		Total	11	4	0	15
30	D+28	**Coarse dispersion**	1	0	0	1
31	D+29	Suspension	1	0	0	1
32	D+30	interfacial properties of suspended particles	1	0	0	1

33	D+31	DiscussionSession/Revision/ClassTest	0	1	0	1
34	D+32	settling in suspensions	1	0	0	1
35	D+33	formulation of flocculated and deflocculated suspensions	1	0	0	1
36	D+34	Emulsions and theories of emulsification	1	0	0	1
37	D+35	DiscussionSession/Revision/ClassTest	0	1	0	1
38	D+36	microemulsion and multiple emulsions	1	0	0	1
39	D+37	Stability of emulsions,preservation of emulsions	1	0	0	1
40	D+38	rheological properties of emulsions	1	0	0	1
41	D+39	DiscussionSession/Revision/ClassTest	0	1	0	1
42	D+40	Emulsion formulation by HLB method.	1	0	0	1
43		Total	10	3	0	13
44	D+41	**Micromeretics**	1	0	0	1
45	D+42	Particle size and distribution	1	0	0	1
46	D+43	DiscussionSession/Revision/ClassTest	0	1	0	1
47	D+44	mean particle size	1	0	0	1
48	D+45	number and weight distribution	1	0	0	1
49	D+46	particle number	1	0	0	1
50	D+47	DiscussionSession/Revision/ClassTest	0	1	0	1
51	D+48	methods for determining particle size by different	1	0	0	1

		methods, counting and separation method				
52.	D+49	particle shape, specific surface, methods for determining surface area, permeability, adsorption	1	0	0	1
53.	D+50	derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.	1	0	0	1
54.	D+51	DiscussionSession/Revision/ClassTest	0	1	0	1
55.		Total	8	3	0	11
56.	D+52	**Drug stability**	1	0	0	1
57.	D+53	Reaction kinetics: zero, pseudo-zero, first & second order	1	0	0	1
58.	D+54	determination of reaction order	1	0	0	1
59.	D+55	DiscussionSession/Revision/ClassTest	0	1	0	1
60.	D+56	Physical and chemical factors influencing the chemical degradation of pharmaceutical product	1	0	0	1
61.	D+57	temperature, solvent, ionic strength	1	0	0	1
62.	D+58	dielectric constant, specific & general acid base catalysis	1	0	0	1
63.	D+59	DiscussionSession/Revision/ClassTest	0	1	0	1
64.	D+60	Simple numerical problems, Stabilization of medicinal agents against common reactions like hydrolysis & oxidation	1	0	0	1
65.	D+61	Accelerated stability testing in expiration dating of pharmaceutical dosage forms.	1	0	0	1
66.	D+62	Photolytic degradation and its prevention	1	0	0	1
		Total	9	2	0	11

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LabPracticalLessonPlan

Program:Bachelorof Pharmacy

Semester:IVSemesterC

ourse:Physical Pharmaceutics- II[nd] **Course Code: BP-407**

PSession:2021-2022

Sno.	Day	Objective	L	T	P	Total
1.	D+1	Determination of particle size, particle size distribution using sieving method	0	0	4	4
2.	D+2	Determination of particle size, particle size distribution using microscopic method	0	0	4	4
3.	D+3	Determination of bulk density, true density and porosity	0	0	4	4
4.	D+4	Determine the angle of repose and influence of lubricant on angle of repose	0	0	4	4
5.	D+5	Determination of viscosity of liquid using Ostwald's viscometer	0	0	4	4
6.	D+6	Determination sedimentation volume with effect of different suspending agent	0	0	4	4
7.	D+7	Determination sedimentation volume with effect of different concentration of single suspending agent	0	0	4	4
8.	D+8	Determination of viscosity of semisolid by using Brookfield viscometer	0	0	4	4
9.	D+9	Determination of reaction rate constant first order.	0	0	4	4
10	D+10	Determination of reaction rate constant second order	0	0	4	4
11	D+11	Accelerated stability studies	0	0	4	4
		Total	0	0	44	44

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Course Plan

Program- B.Pharm **Semester-1st**

Course- Pharmacology-1st **Course Code- BP-404**

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1	D Day	**UNIT-I. General Pharmacology**				
2	D+1	Introduction to Pharmacology, historical landmarks and scope of pharmacology	1	0	0	1
3	D+2	nature and source of drugs, essential drugs concept	1	0	0	1
4	D+3	routes of drug administration	1	0	0	1
5	D+4	Agonists, antagonists (competitive and non-competitive),	1	0	0	1
6	D+5	spare receptors, addiction	1	0	0	1
7	D+6	tolerance, dependence	1	0	0	1
8	D+7	tachyphylaxis, idiosyncrasy, allergy	1	0	0	1
9	D+8	Pharmacokinetics- absorption, distribution, metabolism and excretion, and its factors	1	0	0	1
10	D+9	Tutorial (Problem solving session/ class test)	0	1	0	1
		Total	**8**	**1**		**9**
		UNIT-II General Pharmacology				
11	D+10	Pharmacodynamics- Principles and mechanisms of drug action.	1	0	0	1
12	D+11	Receptor theoriesand classification of receptors,regulation of receptors.	1	0	0	1
13	D+12	drug receptors interactionssignal transduction mechanisms,	1	0	0	1

14	D+13	G-protein–coupled receptors, ion channel receptor,transmembrane enzyme linked receptors	1	0	0	1
15	D+14	transmembrane JAK-STAT binding receptor	1	0	0	1
16	D+15	and receptors that regulate transcription factors, dose response Relationship.	1	0	0	1
17	D+16	therapeutic index, combined effects of drugs and factors modifyingdrug action.	1	0	0	1
18	D+17	Types of receptors including G-protein, jak stat, DRC, therapeutic index and parameters	1	0	0	1
19	D+18	Adverse drug reactions: different types and mechanism	1	0	0	1
20	D+19	pharmacokinetic and pharmacodynamic Drug interactions	1	0	0	1
21	D+20	Drug discovery and clinical evaluation of new drugs -Drug discovery phase	1	0	0	1
22	D+21	preclinical evaluation phase, phases of clinical trials & pharmacovigilance	1	0	0	1
19	D+22	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**12**	**1**	**0**	**13**
		Unit-III Pharmacology of drugs acting on peripheral nervous system				
20	D+23	Organization and function of ANS.	1	0	0	1
21	D+24	Neurohumoraltransmission,co-transmission	1	0	0	1
22	D+25	classification of neurotransmitters.	1	0	0	1
23	D+26	Parasympathomimetics, Parasympatholytics	1	0	0	1
24	D+27	Sympathomimetics, sympatholytics.	1	0	0	1
25	D+28	Neuromuscular blocking agents	1	0	0	1
26	D+29	skeletal muscle relaxants (peripheral).	1	0	0	1
27	D+30	Local anesthetic agents.	1	0	0	1
28	D+31	Drugs used in myasthenia gravis	1	0	0	1
29	D+32	Drugs used in glaucoma	1	0	0	1
30	D+33	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**10**	**1**	**0**	**11**

		UNIT-IV Pharmacology of drugs acting on central nervous system				
31	D+34	Neurohumoral transmission in the C.N.S.special emphasis on importance of various	1	0	0	1
32	D+35	neurotransmitters like with GABA	1	0	0	1
33	D+36	Glutamate, Glycine	1	0	0	1
34	D+37	serotonin, dopamine.	1	0	0	1
35	D+38	General anesthetics and pre-anesthetics.	1	0	0	1
36	D+39	Sedatives, hypnotics and centrally acting muscle relaxants.	1	0	0	1
37	D+40	Anti-epileptics	1	0	0	1
38	D+41	Alcohols and disulfiram	1	0	0	1
39	D+42	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**8**	**1**	**0**	**9**
		UNIT-V Pharmacology of drugs acting on central nervous system				
40	D+42	Psychopharmacological Agents: Antipsychotics,	1	0	0	1
41	D+43	Antidepressants, Anti-Anxiety Agents,	1	0	0	1
42	D+44	Anti-Manicsand Hallucinogens.	1	0	0	1
43	D+45	Drugs Used inParkinsons Disease and Alzheimer's Disease.	1	0	0	1
44	D+46	CNS Stimulants and Nootropics	1	0	0	1
45	D+47	Opioid Analgesics and Antagonists	1	0	0	1
46	D+48	Drug Addiction, Drug Abuse,	1	0	0	1
47	D+49	Tolerance And Dependence.	1	0	0	1
48	D+50	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**7**	**1**	**0**	**8**

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Course Plan

Program- B. Pharm **Semester-1st**

Course- Pharmacology-1st **Course Code- BP-404**

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1	D+Day					
2	D+1	Introduction to experimental pharmacology.	0	0	4	4
3	D+2	Commonly used instruments in experimental pharmacology.	0	0	4	4
4	D+3	Study of common laboratory animals.	0	0	4	4
5	D+4	Maintenance of laboratory animals as per CPCSEA guidelines.	0	0	4	4
6	D+5	Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.	0	0	4	4
7	D+6	Study of different routes of drugs administration in mice/rats.	0	0	4	4
8	D+7	Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.	0	0	4	4
9	D+8	Effect of drugs on ciliary motility of frog oesophagus	0	0	4	4
10	D+9	Effect of drugs on rabbit eye.	0	0	4	4
11	D+10	Effects of skeletal muscle relaxants using rota-rod apparatus.	0	0	4	4

12	D+11	Effect of drugs on locomotor activity usingactophotometer.	0	0	4	4
13	D+12	Anticonvulsant effect of drugs by MES and PTZ method.	0	0	4	4
14	D+13	Study of stereotype and anti-catatonic activity of drugs on rats/mice.	0	0	4	4
15	D+14	Study of anxiolytic activity of drugs using rats/mice.	0	0	4	4
16	D+15	Study of local anesthetics by different methods	0	0	4	4
17	D+16	Tutorial (Problem solving session/ class test)	0	1	4	4
		TOTAL	0	1	48	48

Date-

Name and Signature

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- VIth
Course-MEDICINALCHEMISTRY-lll
Course Code- BP 601T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	**History, stereochemistry, structure activity relationship, classification of B-lactam antibiotics:** Penicillin, Cepholosporins	1	0	0	1
3	D+2	B-lactamase inhibitors, Monobactams	1	0	0	1
4	D+3	**Aminoglycosides:** streptomycin,	1	0	0	1
5	D+4	Neomycin and Kanamycin	1	0	0	1
6	D+5	Problem Solving Session/ class test	0	1	0	1
7	D+6	**Tetracyclines: SAR of tetracycline**	1	0	0	1
8	D+7	Tetracycline, oxytetracycline	1	0	0	1
9	D+8	Chlortetracycline, Minocycline	1	0	0	1
10	D+9	Doxycycline	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	**History, stereochemistry, structure activity relationship, classification of**	1	0	0	1

		Macrolide: Erythromycin, Clarithromycin, Azithromycin				
13	D+12	**Miscellaneous:** chloramphenicol, clindamycin	1	0	0	1
14	D+13	**Prodrugs:** basic concepts of prodrugs its importance	1	0	0	1
15	D+14	**Application of prodrugs design**	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	**Antimalarials:** Etiology of Malaria	1	0	0	1
18	D+17	**Quinolones:**SAR of quinolines, quinine sulphate, chloroquine, amodiaquine, primaquine phosphate, pamaquine, Mefloquine	1	0	0	1
19	D+18	**Biguanides and dihydrotriazines:** cycloguanil pamoate, proguanil	1	0	0	1
20	D+19	**Miscellaneous:** pyrimethamine, Artesunete, Artemether, Atovoquone	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	**Anti-Tubercular Agents** **Synthetic anti tubercular agents:** isoniozid, ethionamide, ethambutol, pyrazinamide,	1	0	0	1
23	D+22	Ethambutol, pyrazinamide	1	0	0	1
24	D+23	Para amino salicylic acid **Anti-Tubercular antibiotics:** Rifampicin, Rifabutin,	1	0	0	1
25	D+24	Cycloserinestreptomycine, capreomycinsulphate	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	**Urinary tract anti-infective agents** **Quinolones:**SAR of quinolones, Nalidixic acid, Norfloxacin, Enoxacin, ciprofloxacin, ofloxacin	1	0	0	1
28	D+27	**Miscellaneous:** Furazolidine, nitrofurantoin, methanamine	1	0	0	1
29	D+28	**Antiviral agents and its related drugs**	1	0	0	1
30	D+29	**Antiviral agents** and its related drug	1	0	0	1
31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
32	D+31	**Antifungal antibiotics:** amphotericin-B, Nystatin,Natamycin,Griseofluvin	1	0	0	1
33	D+32	**Synthetic antifungal agents** and its related drugs	1	0	0	1
34	D+33	**Anti-protozoal Agents:** metronidazole, tinidazole, ornidazole, iodoquinol, pentamidine isethionate	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	**Antihelmintics** with it's related drugs	1	0	0	1
37	D+36	**Sulphonamides and** sulfones History, SAR and classification and chemistry of sulphonamides and its related drugs	1	0	0	1

	D+37	**Folate reductase inhibitors:**Trimethoprim**,** cotrimoxazole **Sulfones:** Dapsone	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		TOTAL	06	02	0	08
40	D+39	**Introduction to drug design** Various approaches used in drug design	1	0	0	1
41	D+40	Physiochemical parametersused in QSAR such as partition coefficient, Hammet's electronic parameter	1	0	0	1
42	D+41	Pharmacophore modeling and docking techniques	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1
44	D+43	**Combinatorial Chemistry:** concept and applications of solid phase synthesis	1	0	0	1
45	D+44	**Combinatorial Chemistry:** concept and applications of solution phase synthesis	1	0	0	1
46	D+45	Problem Solving session / class test	0	1	0	1
		TOTAL	05	2	0	7

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- VIth
Course-MEDICINAL CHEMISTRY-IIl
Course Code- BP 607P
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	To prepare and submit sulphanilamide and calculate it's percentage yield.	0	0	4	4
3	D+2	To prepare and submit 7-Hydroxy,4-methyl coumarin and calculate it's percentage yield.	0	0	4	4
4	D+3	To prepare and submit chlorobutanol and calculate it's percentage yield.	0	0	4	4
5	D+4	To prepare and submit triphenyl imidazole and calculate it's percentage yield.	0	0	4	4
6	D+5	To prepare and submit tolbutamide and calculate it's percentage yield.	0	0	4	4
7	D+6	To prepare and submit Hexamine.	0	0	4	4
8	D+7	To determine the percentage purity of given isoicotinic acid hydrazide tablet.	0	0	4	4
9	D+8	To determine the percentage purity of given chloroquine tablet.	0	0	4	4
10	D+9	To determine the percentage purity of given metronidazole tablet.	0	0	4	4
11	D+10	To determine the percentage purity of given dapsone	0	0	4	4

		tablet.				
12	D+11	To determine the percentage purity of given penicillin tablet.	0	0	4	4
13	D+12	To prepare medicinally compounds by microwave irradiation techniques.	0	0	4	4
		TOTAL	0	0	48	48

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Course Plan

Program- B. Pharm

Semester-VI

Course-Pharmacology-III

Course Code- BP-602 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Pharmacology of drugs acting on Respiratory system: Anti-asthmatic drugs.	1	0	0	1
3.	D+2	Drugs used in the management of COPD.	1	0	0	1
4.	D+3	Expectorants and antitussives.	1	0	0	1
5.	D+4	Nasal decongestants.	1	0	0	1
6.	D+5	Respiratory stimulants.	1	0	0	1
7.	D+6	Pharmacology of drugs acting on the Gastrointestinal Tract: Antiulcer agents.	1	0	0	1
8.	D+7	Drugs for constipation and diarrhoea.	1	0	0	1
9.	D+8	Appetite stimulants and suppressants.	1	0	0	1
10.	D+9	Digestants and carminatives.	1	0	0	1
11.	D+10	Emetics and anti-emetics.	1	0	0	1

TOTAL			**10**	**0**	**0**	**10**
12.	D+11	Chemotherapy: General principles of chemotherapy	1	0	0	1
13.	D+12	Sulfonamides and Cotrimoxazole.	1	0	0	1
14.	D+13	Antibiotics- Penicillins, cephalosporin,	1	0	0	1
15.	D+14	Antibiotics- chloramphenicol, macrolides	1	0	0	1
16.	D+15	Tutorial (Problem solving session/ class test)	0	1	0	1
17.	D+16	Quinolones and fluoroquinolins	1	0	0	1
18.	D+17	Tetracycline and aminoglycosides	1	0	0	1
19.	D+18	Revision of Antibiotics	1	0	0	1
20.	D+19	Chemotherapy principles revied	1	0	0	1
21.	D+20	Tutorial (class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
22.	D+21	**Chemotherapy:** Definition and details about chemotherapy	1	0	0	1
23.	D+22	**Chemotherapy:**Antitubercular agents.	1	0	0	1
24.	D+23	**Chemotherapy:**Antileprotic agents.	1	0	0	1
25.	D+24	**Chemotherapy:**Antifungal agents.	1	0	0	1
26.	D+25	Tutorial (Problem solving session/ class test)	0	1	0	1
27.	D+26	**Chemotherapy:**Anthelmintics.	1	0	0	1
28.	D+27	**Chemotherapy:**Antiviral drugs.	1	0	0	1
29.	D+28	**Chemotherapy:**Antimalarial drugs.	1	0	0	1
30.	D+29	**Chemotherapy:**Antiamoebic agents.	1	0	0	1
31.	D+30	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**8**	**2**	**0**	**10**
32.	D+31	**Chemotherapy:** Urinary tract infections	1	0	0	1
33.	D+32	sexually transmitted diseases.	1	0	0	1

34.	D+33	Chemotherapy of malignancy.	1	0	0	1
35.	D+34	Tutorial (Problem solving session/ class test)	0	1	0	1
36.	D+35	**Immunopharmacology:** Immunostimulants.	1	0	0	1
37.	D+36	Immunosuppressant.	1	0	0	1
38.	D+37	Protein drugs, monoclonal antibodies	1	0	0	1
39.	D+38	target drugs to antigen, biosimilars.	0	1	0	1
TOTAL			**6**	**2**	**0**	**08**
40.	D+39	**Principles of toxicology:** Definition and basic knowledge of acute	1	0	0	1
41.	D+40	sub-acute and chronic toxicity. Definition and basic knowledge of genotoxicity	1	0	0	1
42.	D+41	carcinogenicity, teratogenicity and mutagenicity.	1	0	0	1
43.	D+42	General principles of treatment of poisoning. Clinical symptoms and management of barbiturates	1	0	0	1
44.	D+43	morphine, and organophosphosphorus compound and lead, mercury and arsenic poisoning	1	0	0	1
45.	D+44	**Chronopharmacology**: Definition of rhythm and cycles.	1	0	0	1
46.	D+45	Biological clock and their significance leading to chronotherapy.	1	0	0	0
47.	D+46	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**7**	**1**	**0**	**08**

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Course Plan

Program- B. Pharm

Semester- VI

Course-Pharmacology-III

Course Code- BP-608(P)

Session –2021-22

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	Dose calculation in pharmacological experiments.	0	0	4	4
3	D+2	Anti-allergics activity by mast cell stabilization assay.	0	0	4	4
4	D+3	Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.	0	0	4	4
5	D+4	Study of effect of drugs on gastrointestinal motility.	0	0	4	4
6	D+5	Effects of agonist and antagonists on guinea pig ileum.	0	0	4	4
7	D+6	Estimation of serum biochemical parameters by using semi-auto analyzer.	0	0	4	4
8	D+7	Effect of saline purgative on frog intestine.	0	0	4	4

9	D+8	Insulin hypoglycemic effect in rabbit.	0	0	4	4
10	D+9	Test for pyrogens (rabbit method).	0	0	4	4
11	D+10	Determination of acute oral toxicity (LD50) of a drug from a given data.	0	0	4	4
12	D+11	Determination of acute skin irritation/ corrosion of a test substance.	0	0	4	4
13	D+12	Determination of acute eye irritation/ corrosion of a test substance.	0	0	4	4
14	D+13	Calculation of pharmacokinetic parameters from a given data.	0	0	4	4
15	D+14	Biostatistics methods in experimental pharmacology (student's test, ANOVA).	0	0	4	4
16	D+15	Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test).	0	0	4	4
		TOTAL	**0**	**0**	**60**	**60**

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Course Plan

Program- B. Pharm Semester-**VI**

Course-Herbal Drug Technology**Course Code-** BP-603 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	**Herbs as raw materials:**Definition of herb	1	0	0	1
3.	D+2	herbal medicine,herbal medicinal product	1	0	0	1
4.	D+3	herbal drug preparation,Source of Herbs	1	0	0	1
5.	D+4	Selection, identification and authentication of herbal materials Processing of herbal raw material	1	0	0	1
6.	D+5	Tutorial (Problem solving session/ class test)	0	1	0	1
7.	D+6	**Biodynamic Agriculture:** Good agricultural practices in cultivation of medicinal plants including Organic farming.	1	0	0	1
8.	D+7	Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.	1	0	0	1
9.	D+8	Indian Systems of Medicine: a)Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy	1	0	0	1
10.	D+9	b)Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika,Churna, Lehya and Bhasma.	1	0	0	1
11.	D+10	**Tutorial (Problem solving session/ class test)**	0	1	0	1

TOTAL			**8**	**2**	**0**	**10**
12.	D+11	Nutraceuticals: General aspects, Market, growth, scope and types of products available in the market.	1	0	0	1
13.	D+12	Health benefits and role of Nutraceuticals in ailments like Diabetes	1	0	0	1
14.	D+13	CVS diseases, Cancer, Irritable bowel syndrome	1	0	0	1
15.	D+14	various Gastro intestinal diseases.	1	0	0	1
16.	D+15	Tutorial (Problem solving session/ class test)	0	1	0	1
17.	D+16	Study of following herbs as health food: Alfaalfa, Chicory,	1	0	0	1
18.	D+17	Ginger, Fenugreek, Garlic, Honey,Amla, Ginseng, Ashwagandha, Spirulina	1	0	0	1
19.	D+18	Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification	1	0	0	1
20.	D+19	Study of following drugs and their possible side effects and interactions	1	0	0	1
21.	D+20	**Tutorial (Problem solving session/ class test)**	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
22.	D+21	Hypercium, kava-kava, Ginkobiloba,	1	0	0	1
23.	D+22	Ginseng, Garlic, Pepper &Ephedra.	1	0	0	1
24.	D+23	Herbal Cosmetics	1	0	0	1
25.	D+24	Sources and description of raw materials of herbal origin used via, fixed oils,	1	0	0	1
26.	D+25	Tutorial (Problem solving session/ class test)	0	1	0	1
27.	D+26	waxes, gums colours, perfumes, protective agents, bleaching agents,	1	0	0	1
28.	D+27	antioxidants in products such as skin care,hair care and oral hygiene products.	1	0	0	1
29.	D+28	Herbal Excipients – Significance of substances of natural origin as excipients	1			1
30.	D+29	colorants, sweeteners, binders, diluents,	1			1
31.	D+30	**Tutorial (Problem solving session/ class test)**	1	0	0	1
		TOTAL	**8**	**2**	**0**	**10**

32.	D+31	viscosity builders, disintegrants, flavors &perfumes.	1	0	0	1
33.	D+32	Herbal formulations: Conventional herbal formulations like syrups, mixtures	1	0	0	1
34.	D+33	tablets and Novel dosage forms like phytosomes	1	0	0	1
35.	D+34	**Evaluation of Drugs** WHO & ICH guidelines for the assessment of herbal drugs Stability testing of herbal drugs.	0	1	0	1
36.	D+35	Patenting and Regulatory requirements of natural products: a) Definition of the terms: Patent,	0	1	0	1
37.	D+36	IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy	1	0	0	1
38.	D+37	b) Patenting aspects of Traditional Knowledge and Natural Products.	1	0	0	1
39.	D+38	Case study of Curcuma & Neem	1	0	0	1
40.	D+39	Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC)	1	0	0	1
41.	D+40	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
42.	D+41	Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.	1	0	0	1
43.	D+42	General Introduction to Herbal Industry	1	0	0	1
44.	D+43	Herbal drugs industry: Present scope and future prospects.	1	0	0	1
45.	D+44	A brief account of plant based industries	1	0	0	1
46.	D+45	Tutorial (Problem solving session/ class test)	0	1	0	1
47.	D+46	institutions involved in work on medicinal	1	0	0	1
48.	D+47	aromatic plants in India.	1	0	0	1
49.	D+48	Schedule T–Good Manufacturing Practice of Indian systems of medicine	1	0	0	1
50.	D+49	Components of GMP (Schedule –T) and its objectives Infrastructural requirements, working space, storage area,machinery and equipment, standard operating procedures, health and hygiene, documentation and records.	1	0	0	1

51.	D+50	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**

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Course Plan

Program- B. Pharm

Semester- VI

Course-Herbal Drug Technology

Course Code- BP-609(P)

Session - 2020-21

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	To perform preliminary phytochemical screening of crude drugs	0	0	3	3
3	D+2	To determine the alcohol content of Asava and arista.	0	0	3	3
4	D+3	To evaluate the given excipients from natural origin.	0	0	3	3
5	D+4	To prepare and evaluate 10gm of Turmeric Herbal cream.	0	0	3	3
6	D+5	Preparation and standardization of herbal lotion.	0	0	3	3
7	D+6	To prepare and standardize Methi-Shikakai shampoo.	0	0	3	3
8	D+7	To prepare and evaluate 50gm of Churna mixture.	0	0	3	3
9	D+8	To determine the total alkaloid content of cinchona extract.	0	0	3	3
10	D+9	To prepare and evaluate 20ml of Orange Syrup B.P.C	0	0	3	3

11	D+10	To prepare and evaluate the 400mg tablet.	0	0	3	3
12	D+11	Monograph Analysis of Castor Oil.	0	0	3	3
13	D+12	To prepare and submit 100 ml of Sodium chloride solution BPC 1968.	0	0	3	3
14	D+13	To prepare and submit 50 ml Chloroxylenol Solution BPC 1968.	0	0	3	3
		TOTAL	**0**	**0**	**39**	**39**

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Course Plan

Program- B. Pharm

Semester- VIst

Course- BIOPHARMACEUTICS AND PHARMACOKINETICS

Course Code- BP 604 T

Session – 2021-2022

S. No.	Day	Subject	L	T	P	Total
	D Day					
1.	D+1	Introduction to Biopharmaceutics (ADME)	1	0	0	1
2.	D+2	Absorption: Introduction and mechanism.	1	0	0	1
3.	D+3	Mechanisms of drug absorption through GIT.	1	0	0	1
4.	D+4	Tutorial (Problem solving session/ class test)	0	1	0	1
5.	D+5	Factors influencing drugabsorption though GIT.	1	0	0	1
6.	D+6	Absorption of drug from Non per oral extra-vascular Routes.	1	0	0	1
7.	D+7	Distribution Tissue permeability of drugs, binding of drugs,apparent volume of drug distribution,	1	0	0	1
8.	D+8	Plasma and tissue protein binding of drugs, factors affectingprotein-drug binding.	1	0	0	1
9.	D+9	Kinetics of protein binding, Clinical significance of proteinbinding of drugs	1	0	0	1

10.	D+10	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
11.	D+11	Elimination:Drug metabolism and basic understanding metabolic pathways	1	0	0	1
12.	D+12	Renalexcretion of drugs, factors affecting renal excretion of drugs.	1	0	0	1
13.	D+13	Renalclearance.	1	0	0	1
14.	D+14	Non renal routes of drug excretion of drugs.	1	0	0	1
15.	D+15	Bioavailability and Bioequivalence: Definition and Objectives of bioavailability	0	1	0	1
16.	D+16	Absolute and relative bioavailability,	1	0	0	1
17.	D+17	Measurement of bioavailability	1	0	0	1
18.	D+18	In-vitro drug dissolution models, in-vitro-in-vivo correlations, bioequivalence studies.	1	0	0	1
19.	D+19	Methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.	1	0	0	1
20.	D+20	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
21.	D+21	Pharmacokinetics: Definition and introduction to Pharmacokinetics.	1	0	0	1
22.	D+22	Compartmentmodels.	1	0	0	1
23.	D+23	Non compartment models.	1	0	0	1
24.	D+24	Physiological models, One compartment openmodela) Intravenous Injection (Bolus).	1	0	0	1
25.	D+25	Tutorial (Problem solving session/ class test)	0	1	0	1
26.	D+26	One compartment openmodel (b). Intravenous infusion and	1	0	0	1

27.	D+27	Tutorial (Problem solving session/ class test)	0	1	0	1
28.	D+28	One compartment open model c) Extravascular administrations.	1	0	0	1
29.	D+29	Pharmacokinetics parameters - KE ,t1/2,Vd,AUC,Ka,	1	0	0	1
30.	D+30	Pharmacokinetics parameters - CLT andCLR-definitions methods of eliminations, understanding of their significance andapplication.	1	0	0	1
		TOTAL	**8**	**2**	**0**	**10**
31.	D+31	Multicompartment models: Introduction.	1	0	0	1
32.	D+32	Two compartment open model.	1	0	0	1
33.	D+33	IV bolus Kinetics of multiple dosing,	1	0	0	1
34.	D+34	Tutorial (Problem solving session/ class test)	1	0	0	1
35.	D+35	Steady state drug levels.	0	1	0	1
36.	D+36	Calculation of loading.	1	0	0	1
37.	D+37	Maintained of doses and their significance in clinical settings.	1	0	0	1
38.	D+38	Tutorial (Problem solving session/ class test)	1	0	0	1
TOTAL			**6**	**2**	**0**	**8**
39.	D+39	Nonlinear Pharmacokinetics:Introduction	1	0	0	1
40.	D+40	Factors causing Non-linearity in Nonlinear Pharmacokinetics.	1	0	0	1
41.	D+41	Michaelis-menton method of estimating parameters.	1	0	0	1
42.	D+42	Tutorial (Problem solving session/ class test)	0	1	0	1
43.	D+43	Explanation with example of drugs.	1	0	0	1
44.	D+44	Tutorial (Problem solving session/ class test)	0	1	0	1
45.	D+45	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**4**	**3**	**0**	**07**

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Course Plan

Program- B. Pharm

Semester-VI

Course-PHARMACEUTICAL BIOTECHNOLOGY

Course Code- BP-605 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Brief introduction to Biotechnology with reference to Pharmaceutical Sciences.	1	0	0	1
3.	D+2	**Enzyme Biotechnology**- Methods of enzyme immobilization and applications.	1	0	0	1
4.	D+3	Biosensors- Working and applications of biosensors in Pharmaceutical Industries	1	0	0	1
5.	D+4	Brief introduction to Protein Engineering.	1	0	0	1
6.	D+5	Use of microbes in industry. Production of Enzymes	1	0	0	1
7.	D+6	General consideration - Amylase, Catalase	1	0	0	1
8.	D+7	Peroxidase, Lipase	1	0	0	1
9.	D+8	Protease, Penicillinase.	1	0	0	1
10.	D+9	Basic principles of genetic engineering.	1	0	0	1
11.	D+10	Tutorial (Problem solving session/ class test)	0	1	0	1

TOTAL			**09**	**1**	**0**	**10**
12.	D+11	Study of cloning vectors	1	0	0	1
13.	D+12	restriction endonucleases and DNA ligase.	1	0	0	1
14.	D+13	Recombinant DNA technology	1	0	0	1
15.	D+14	Application of genetic engineering in medicine	1	0	0	1
16.	D+15	Tutorial (Problem solving session/ class test)	0	1	0	1
17.	D+16	Application of r DNA technology and genetic engineering in the production of: i) Interferon	1	0	0	1
18.	D+17	ii) Vaccines- hepatitis- B iii) Hormones-Insulin.	1	0	0	1
19.	D+18	Brief introduction to PCR.	1	0	0	1
20.	D+19	Brief introduction to PCR.	1	0	0	1
21.	D+20	Tutorial (class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
22.	D+21	Types of immunity- humoral immunity, cellular immunity	1	0	0	1
23.	D+22	Structure of Immunoglobulins.	1	0	0	1
24.	D+23	Structure and Function of MHC.	1	0	0	1
25.	D+24	Hypersensitivity reactions, Immune stimulation and Immune suppressions.	1	0	0	1
26.	D+25	General method of the preparation of bacterial infections, toxoids, viral vaccine,	1	0	0	1
27.	D+26	antitoxins, serum-immune blood derivatives and other products relative to immunity.	1	0	0	1
28.	D+27	Storage conditions and stability of official vaccines.	1	0	0	1
29.	D+28	Hybridoma technology- Production, Purification and Applications,	1	0	0	1
30.	D+29	Blood products and Plasma Substitutes.	1	0	0	1
31.	D+30	Tutorial (Problem solving session/ class test)	0	1	0	1
		TOTAL	**9**	**1**	**0**	**10**

32.	D+31	**Immuno-blotting techniques- ELISA**	1	0	0	1
33.	D+32	Western blotting, Southern blotting	1	0	0	1
34.	D+33	Genetic organization of Eukaryotes and Prokaryotes.	1	0	0	1
35.	D+34	Tutorial (Problem solving session/ class test)	0	1	0	1
36.	D+35	**Microbial genetics including transformation, transduction,**	1	0	0	1
37.	D+36	conjugation, plasmids and transposons.	1	0	0	1
38.	D+37	Introduction to Microbial biotransformation and applications.	1	0	0	1
39.	D+38	Mutation: Types of mutation/mutants.	1	0	0	1
TOTAL			**7**	**1**	**0**	**08**
40.	D+39	Fermentation methods and general requirements,	1	0	0	1
41.	D+40	study of media, equipment's, sterilization methods, aeration process, stirring.	1	0	0	1
42.	D+41	Large scale production fermenter design and its various controls	1	0	0	1
43.	D+42	Study of the production of - Penicillins, citric acid,	1	0	0	1
44.	D+43	Vitamin B12, Glutamic acid, Griseofulvin.	1	0	0	1
45.	D+44	Blood Products: Collection, Processing and Storage of whole human blood	1	0	0	1
46.	D+45	dried human plasma, plasma Substitutes.	1	0	0	0
47.	D+46	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**7**	**1**	**0**	**08**

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Course Plan

Program- B. Pharm

Semester-**VIII**

Course-Biostatistics and Research

Course Code- BP-801 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	**Introduction: Statistics**	1	0	0	1
3.	D+2	Biostatistics,	1	0	0	1
4.	D+3	Frequency distribution	1	0	0	1
5.	D+4	Measures of central tendency: Mean	1	0	0	1
6.	D+5	Tutorial (Problem solving session/ class test)	0	1	0	1
7.	D+6	**Median, Mode- Pharmaceutical examples**	1	0	0	1
8.	D+7	Measures of dispersion: Dispersion, Range	1	0	0	1
9.	D+8	standard deviation, Pharmaceuticalproblems	1	0	0	1
10.	D+9	Correlation: Definition, Karl Pearson's coefficient of correlation	1	0	0	1
11.	D+10	Multiple correlation- Pharmaceuticals examples.	1	0	0	1
TOTAL			**9**	**1**	**0**	**10**

12.	D+11	Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by,	1	0	0	1
13.	D+12	Multiple regression, standard error of regression– Pharmaceutical examples	1	0	0	1
14.	D+13	Probability: Definition of probability, Binomial distribution	1	0	0	1
15.	D+14	Normal distribution, Poisson's distribution, Properties– problems.	1	0	0	1
16.	D+15	Sample, Population, large sample, small sample,	1	0	0	1
17.	D+16	Null hypothesis, alternative hypothesis, sampling, essence of sampling,	1	0	0	1
18.	D+17	types of sampling, Error-I type, Error-II type, Standard error of mean (SEM) - Pharmaceutical examples	1	0	0	1
19.	D+18	Parametric test: t-test (Sample, Pooled or Unpaired and Paired),	1	0	0	1
20.	D+19	ANOVA, (One way and Two way), Least Significance difference.	1	0	0	1
21.	D+20	**Tutorial (Problem solving session/ class test)**	0	1	0	1
TOTAL			**9**	**1**	**0**	**10**
22.	D+21	Non-Parametric tests: Wilcoxon Rank Sum Test	1	0	0	1
23.	D+22	Mann-Whitney U test, Kruskal-Wallis test	1	0	0	1
24.	D+23	Friedman Test.	1	0	0	1
25.	D+24	Introduction to Research: Need for research, Need for design of Experiments,	1	0	0	1
26.	D+25	Design Technique, Plagiarism. Graphs: Histogram,	1	0	0	1
27.	D+26	Pie Chart, Cubic Graph, response surface plot, Counter Plot graph	1	0	0	1
28.	D+27	Designing the methodology: Sample size determination and Power of a study	1	0	0	1
29.	D+28	presentation of data, Protocol, Cohorts studies	1	0	0	1
30.	D+29	observational studies, Experimental studies	1	0	0	1
31.	D+30	Designing clinical trial, various phases	1	0	0	1
		TOTAL	**10**	**0**	**0**	**10**
32.	D+31	Blocking and confounding system for Two-level	1	0	0	1

		factorials				
33.	D+32	Regression modeling: Hypothesis testing in Simple	1	0	0	1
34.	D+33	Multiple regression models	1	0	0	1
35.	D+34	Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel,	0	1	0	1
36.	D+35	Patenting and Regulatory requirements of natural products: a) Definition of the terms: Patent,	0	1	0	1
37.	D+36	SPSS, MINITAB®	1	0	0	1
38.	D+37	Design of experiment,	1	0	0	1
39.	D+38	R- Online Statistical Software's to Industrial and Clinical trial approach.	1	0	0	1
40.	D+39	R- Online Statistical Software's to Industrial and Clinical trial approach.	1	0	0	1
41.	D+40	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**8**	**2**	**0**	**10**
42.	D+41	Design and Analysis of experiments	1	0	0	1
43.	D+42	Factorial Design: Definition, 2^2	1	0	0	1
44.	D+43	2^3 design. Advantages of factorial design	1	0	0	1
45.	D+44	Response Surface methodology: Central composite design	1	0	0	1
46.	D+45	Historical design, Optimization Techniques.	1	0	0	1
47.	D+46	Historical design, Optimization Techniques.	1	0	0	1
48.	D+57	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**6**	**1**	**0**	**07**

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Course Plan

Program- B. Pharm

Semester-VIII

Course-SOCIAL AND PREVENTIVE PHARMACY

Course Code- BP-802 (T)

Session - 2021-22

S. No.	Day	Subject	L	T	P	Total
1.	D Day					
2.	D+1	Concept of health and disease: Definition, concepts and evaluation of public health.	1	0	0	1
3.	D+2	Understanding the concept of prevention and control of disease,	1	0	0	1
4.	D+3	Social causes of diseases and social problems of the sick.	1	0	0	1
5.	D+4	Social and health education: Food in relation to nutrition and health,	1	0	0	1
6.	D+5	Balanced diet, Nutritional deficiencies, Vitamin deficiencies,	1	0	0	1
7.	D+6	Malnutrition and its prevention.	1	0	0	1
8.	D+7	Sociology and health: Socio cultural factors related to health and disease,	1	0	0	1
9.	D+8	Impact of urbanization on health and disease,	1	0	0	1
10.	D+9	Poverty and health.	1	0	0	1

11.	D+10	Hygiene and health: personal hygiene and health care; avoidable habits.	1	0	0	1
TOTAL			**10**	**0**	**0**	**10**
12.	D+11	Preventive medicine: General principles of prevention and control of diseases	1	0	0	1
13.	D+12	cholera, SARS	1	0	0	1
14.	D+13	Ebola virus, influenza	1	0	0	1
15.	D+14	Acute respiratory infections	1	0	0	1
16.	D+15	Malaria, chicken guinea	1	0	0	1
17.	D+16	Dengue, lymphatic filariasis	1	0	0	1
18.	D+17	Pneumonia, hypertension,	1	0	0	1
19.	D+18	Diabetes mellitus	1	0	0	1
20.	D+19	Cancer	1	0	0	1
21.	D+20	Drug addiction-drug substance abuse.	1	0	0	1
TOTAL			**10**	**0**	**0**	**10**
22.	D+21	National health programs, its objectives, functioning and outcome	1	0	0	1
23.	D+22	HIV AND AIDS control programme	1	0	0	1
24.	D+23	TB	1	0	0	1
25.	D+24	Integrated disease surveillance program (IDSP)	1	0	0	1
26.	D+25	National leprosy control programme	1	0	0	1
27.	D+26	National mental health program	1	0	0	1
28.	D+27	National programme for prevention and control of deafness	1	0	0	1
29.	D+28	Universal immunization programme	1	0	0	1
30.	D+29	National programme for control of blindness,	1	0	0	1
31.	D+30	Pulse polio programme	1	0	0	1
		TOTAL	**10**	**0**	**0**	**10**

32.	D+31	National health intervention programme for mother and child	1	0	0	1
33.	D+32	National family welfare programme	1	0	0	1
34.	D+33	National tobacco control programme	1	0	0	1
35.	D+34	National Malaria Prevention Program	1	0	0	1
36.	D+35	National programme for the health care for the elderly	1	0	0	1
37.	D+36	Social health programme	1	0	0	1
38.	D+37	Role of WHO in Indian national program.	1	0	0	1
39.	D+38	Revision & Class test	0	1	0	1
TOTAL			**7**	**1**	**0**	**08**
40.	D+39	Community services in rural	1	0	0	1
41.	D+40	Urban and school health	1	0	0	1
42.	D+41	Functions of PHC	1	0	0	1
43.	D+42	Improvement in rural sanitation	1	0	0	1
44.	D+43	national urban health mission	1	0	0	1
45.	D+44	Health promotion	1	0	0	1
46.	D+45	Health education in school.	1	0	0	1
47.	D+46	Tutorial (Problem solving session/ class test)	0	1	0	1
TOTAL			**7**	**1**	**0**	**08**

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Course Plan

Program-BACHELOR OF PHARMACY
Semester- IVth
Course-PHARMCEUTICAL MARKETING
Course Code-BP-803T
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	Marketing: Definition, general concepts and scope of marketingu	1	0	0	1
3	D+2	Selling; Marketing environment	1	0	0	1
4	D+3	Industry and competitive analysis	1	0	0	1
5	D+4	Distinction between marketing	1	0	0	1
6	D+5	Problem Solving Session/ class test	0	1	0	1
7	D+6	Analysis consumer	1	0	0	1
8	D+7	Industrial buying behavior	1	0	0	1
9	D+8	Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist. Analyzing the Market;Role of market research	1	0	0	1
10	D+9	Quantitative and qualitative aspects; size and composition of the market; demographicdescriptions and socio-psychological characteristics of the consumer; marketsegmentation& targeting	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	Product decision: Classification, product line and product mix decisions	1	0	0	1
13	D+12	Product life cycle	1	0	0	1
14	D+13	product portfolio analysis; product positioning; New product decision	1	0	0	1

15	D+14	Product branding and packaging	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	Labeling decisions	1	0	0	1
18	D+17	Product management in pharmaceutical industry	1	0	0	1
19	D+18	Product management strategies	1	0	0	1
20	D+19	Product management in pharmaceutical industry	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	Promotion: Methods	1	0	0	1
23	D+22	Determination of promotion mix	1	0	0	1
24	D+23	promotional budget; An overview of personal selling	1	0	0	1
25	D+24	Advertising, direct mail, journals,	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	Sampling and retailing,	1	0	0	1
28	D+27	Medical exhibition	1	0	0	1
29	D+28	Public relations	1	0	0	1
30	D+29	Online promotional techniques for OTC Products	1	0	0	1
31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
32	D+31	Pharmaceutical marketing channels: Designing channel, channel members	1	0	0	1
33	D+32	selecting the appropriate channel, conflict in channels	1	0	0	1
34	D+33	physical distribution management: Strategic importance, tasks in physical distribution management	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	Professional sales representative (PSR): Duties of PSR	1	0	0	1
37	D+36	Purpose of detailing, selection and training	1	0	0	1
	D+37	supervising, norms for customer calls, motivating, evaluating,compensation and future prospects of the PSR	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		TOTAL	06	02	0	08
40	D+39	Pricing: Meaning, importance, objectives, determinants of price; pricing methods and strategies	1	0	0	1

41	D+40	Issues in price management in pharmaceutical industry	1	0	0	1
42	D+41	An overview of DPCO (Drug Price Control Order)	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1
44	D+43	NPPA (National Pharmaceutical Pricing Authority)	1	0	0	1
45	D+44	Emerging concepts in marketing: Vertical & Horizontal Marketing; Rural Marketing; Consumerism; Industrial Marketing; Global Marketing	1	0	0	1
46	D+45	Problem Solving session / class test	0	1	0	1
		TOTAL	05	2	0	7

SignatureFaculty

MONAD UNIVERSITY

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Course Plan

Program- BACHELOR OF PHARMACY
Semester- VIIIth
Course-QUALITY CONTROL AND STANDARDIZATION OF HERBALS
Course Code- BP 806 ET
Session- 2021-2022

S. No.	Day	Subject	L	T	P	Total
1	D Day					
2	D+1	Basic tests for drugs – Pharmaceutical substances,	1	0	0	1
3	D+2	Basic tests for drugs – Pharmaceutical substances,	1	0	0	1
4	D+3	Medicinal plants materials	1	0	0	1
5	D+4	dosage forms	1	0	0	1
6	D+5	Problem Solving Session/ class test	0	1	0	1
7	D+6	WHO guidelines for quality control of herbal drugs.	1	0	0	1
8	D+7	WHO guidelines for quality control of herbal drugs.	1	0	0	1
9	D+8	Evaluation of commercial crude drugs intended for use	1	0	0	1
10	D+9	Evaluation of commercial crude drugs intended for use	1	0	0	1
11	D+10	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
12	D+11	Quality assurance in herbal drug industry of cGMP	1	0	0	1
13	D+12	GAP	1	0	0	1
14	D+13	GMP	1	0	0	1
15	D+14	GLP in traditional system of medicine.	1	0	0	1
16	D+15	Problem Solving Session/ class test	0	1	0	1
17	D+16	WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines	1	0	0	1

18	D+17	WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines	1	0	0	1
19	D+18	WHO Guidelines on GACP for Medicinal Plants.	1	0	0	1
20	D+19	WHO Guidelines on GACP for Medicinal Plants.	1	0	0	1
21	D+20	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
22	D+21	EU guidelines for quality control of herbal drugs.	1	0	0	1
23	D+22	EU guidelines for quality control of herbal drugs.	1	0	0	1
24	D+23	ICH guidelines for quality control of herbal drugs.	1	0	0	1
25	D+24	ICH guidelines for quality control of herbal drugs.	1	0	0	1
26	D+25	Problem Solving Session/ class test	0	1	0	1
27	D+26	Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines	1	0	0	1
28	D+27	Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines	1	0	0	1
29	D+28	Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines	1	0	0	1
30	D+29	Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines	1	0	0	1
31	D+30	Problem Solving Session/ class test	0	1	0	1
		TOTAL	08	2	0	10
32	D+31	Stability testing of herbal medicines.	1	0	0	1
33	D+32	Stability testing of herbal medicines.	1	0	0	1
34	D+33	Application of various chromatographic techniques in standardization of herbal products.	1	0	0	1
35	D+34	Problem sloving session/ class test	0	1	0	1
36	D+35	Preparation of documents for new drug application and export registration.	1	0	0	1
37	D+36	GMP requirements and Drugs & Cosmetics Act provisions.	1	0	0	1
	D+37	GMP requirements and Drugs & Cosmetics Act provisions.	1	0	0	1
38	D+38	Problem sloving session/ class test	0	1	0	1
39		TOTAL	06	02	0	08
40	D+39	Regulatory requirements for herbal medicines.	1	0	0	1
41	D+40	WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems	1	0	0	1
42	D+41	WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems	1	0	0	1
43	D+42	Problem Solving Session/ class test	0	1	0	1

44	D+43	Comparison of various Herbal Pharmacopoeias	1	0	0	1
45	D+44	Role of chemical and biological markers in standardization of herbal products	1	0	0	1
46	D+45	Problem Solving session / class test	0	1	0	1
		TOTAL	05	2	0	7

Signature

Faculty