



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B. Pharm Semester I

Course Code	Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					TOTAL
			L	T	P	Credit	Scheme	Theory		Practical		
								Max.	Min. Passing	Max.	Min. Passing	
BP101T	F	Basics of Python Programming for Pharmaceutical Sciences	2	0	0	2	CIA	10	25	-	-	50
							SE-I					
							SE-II	10				
							ESE	30				
BP102T	F	General Pharmacy	3	0	0	3	CIA	15	38	-	-	75
							SE-I					
							SE-II	15				
							ESE	45				
BP103T	F	Healthcare Psychology and Communication Skills	1	0	0	1	CIA	10	25	-	-	50
							SE-I	10				
							SE-II					
							ESE	30				
BP104T	F	Human Anatomy, Physiology and Pathophysiology I	4	0	0	4	CIA	20	50	-	-	100
							SE-I					
							SE-II	20				
							ESE	60				
BP105T	F	Introduction to Pharmacognosy	3	0	0	3	CIA	15	38	-	-	75
							SE-I					
							SE-II	15				
							ESE	45				
BP106T	F	Pharmaceutical Inorganic and Analytical Chemistry	3	0	0	3	CIA	15	38	-	-	75
							SE-I					
							SE-II	15				
							ESE	45				
BP107P	F	General Pharmacy	0	0	3	1	CIA	-	-	10	25	50
							SE-I	-				
							SE-II	-		10		
							ESE	-		30		
BP108P	F	Healthcare Psychology and Communication	0	0	2	1	CIA	-	-	10	25	50
							SE-I	-		10		



		Skills					SE-II	-				
							ESE	-		30		
							CIA	-		10		
							SE-I	-		10	25	50
							SE-II	-		10		
							ESE	-		30		
							CIA	-		10		
							SE-I	-		10	25	50
							SE-II	-		10		
							ESE	-		30		
							CIA	-		10		
							SE-I	-		10	25	50
							SE-II	-		10		
							ESE	-		30		
TOTAL			16	0	14	21	TOTAL MARKS					675
Total Contact Hours Per Week			30									

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	21
Credit	21	-	-	-			

L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination


BOS Chairman


Dean Academics


Associate Director


Director

Date 1- 04-09-2026





Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B.Pharm Semester II

Course Code	Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					Total
			L	T	P	Credit	Scheme	Theory		Practical		
								Max.	Min. Passing	Max.	Min. Passing	
BP201T	F	Applied Biostatistics and Data Analytics for Pharmaceutical Sciences	2	0	0	2	CIA	10	25	-	-	50
							SE-I	10				
							SE-II					
							ESE	30				
BP202T	F	Biochemistry	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP203T	F	Human Anatomy, Physiology and Pathophysiology II	4	0	0	4	CA	20	50	-	-	100
							SE-I	20				
							SE-II					
							ESE	60				
BP204T	F	Pharmaceutical Organic Chemistry	4	0	0	4	CIA	20	50	-	-	100
							SE-I	20				
							SE-II					
							ESE	60				
BP205T	F	Pharmacognosy and Phytochemistry	4	0	0	4	CIA	20	50	-	-	100
							SE-I	20				
							SE-II					
							ESE	60				
BP206T	F	Physical Pharmaceutics	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP207P	F	Biochemistry	0	0	3	1	CIA	-	-	10	25	50
							SE-I			10		
							SE-II					
							ESE			30		
BP208P	F	Human Anatomy, Physiology and Pathophysiology II	0	0	3	1	CIA	-	-	10	25	50
							SE-I			10		
							SE-II					
							ESE			30		
BP209P	F	Pharmaceutical Organic Chemistry	0	0	3	1	CIA	-	-	10	25	50
							SE-I			10		
							SE-II					
							ESE			30		



BP210P		F	Pharmacognosy and Phytochemistry	0	0	3	1	CIA	-	-	10	25	50
								SE-I			10		
								SE-II					
								ESE			30		
BP211P		F	Physical Pharmaceutics	0	0	3	1	CIA	-	-	10	25	50
								SE-I			10		
								SE-II					
								ESE			30		
BP212P SEC*	BP212P SEC1	F, E	Communication Skills	0	0	2	1	CIA	-	-	10	25	50
	BP212P SEC2	F, E	Mental Well-Being, Stress & Conflict Management					SE-I			10		
								SE-II					
	BP212P SEC3	F, E	Fundamentals of Computer Operations					ESE			30		
TOTAL				20	0	17	26	TOTAL MARKS					800
Total Contact Hours Per Week				37									

*Elective

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	25	-	1	-			26

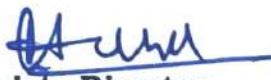
L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination

Total Credit Distribution in FY

SEM-I	SEM-II	TOTAL
21	26	47


BOS Chairman


Dean Academics


Associate Director


Director

Date :- 04-09-2026





B.Pharm Semester III

Course Code		Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					TOTAL
				L	T	P	Credit	Scheme	Theory		Practical		
									Max.	Min. Passing	Max .	Min. Passing	
BP301T		F	Introduction to Machine Learning in Pharmaceutical Sciences	2	-	-	2	CIA	10	25	-	-	50
								SE-I	10				
								SE-II	30				
								ESE	30				
BP302T		F	Environmental Sciences	1	-	-	1	CIA	10	25	-	-	50
								SE-I	10				
								SE-II	30				
								ESE	30				
BP303T		F	Ethics and Universal Human Values	1	-	-	1	CIA	10	25	-	-	50
								SE-I	10				
								SE-II	30				
								ESE	30				
BP304T		F	General Pharmacology	3	-	-	3	CIA	15	38	-	-	75
								SE-I	15				
								SE-II	45				
								ESE	45				
BP305T		F	Heterocyclic Compounds and Stereochemistry	3	-	-	3	CIA	15	38	-	-	75
								SE-I	15				
								SE-II	45				
								ESE	45				
BP306T		F	Pharmaceutical Dosage Forms I	3	-	-	3	CIA	15	38	-	-	75
								SE-I	15				
								SE-II	45				
								ESE	45				
BP307T		F	Pharmaceutical Engineering	3	-	-	3	CIA	15	38	-	-	75
								SE-I	15				
								SE-II	45				
								ESE	45				
BP308T		F	Pharmaceutical Microbiology	3	-	-	3	CIA	15	38	-	-	75
								SE-I	15				
								SE-II	45				
								ESE	45				
BP309P		F	General Pharmacology	-	-	4	2	CIA	-	-	10	25	50
								SE-I			10		
								SE-II			30		
								ESE			30		
BP310P		F	Heterocyclic Compounds and Stereochemistry	-	-	4	2	CIA	-	-	10	25	50
								SE-I			10		
								SE-II			30		
								ESE			30		
BP311P		F	Pharmaceutical Dosage Forms I	-	-	3	1	CIA	-	-	10	25	50
								SE-I			10		
								SE-II			30		
								ESE			30		
BP312 P AEC*	BP312P AEC1	F	Nutraceuticals and Functional Foods		-	2	1	CIA	-	-	10	25	50
			Food Analysis					SE-I			10		
								SE-II					



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B.Pharm Semester IV

Course Code	Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					Total
			L	T	P	Credit	Scheme	Theory		Practical		
								Max.	Min. Passing	Max.	Min. Passing	
BP401T	F	Herbal Drug Technology	3	-	-	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II	15				
							ESE	45				
BP402T	F	Medicinal Chemistry	3	-	-	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II	15				
							ESE	45				
BP403T	F	Pharmaceutical Biotechnology	3	-	-	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II	15				
							ESE	45				
BP404T	F	Social Pharmacy and Public Health	2	-	-	2	CIA	10	25	-	-	50
							SE-I	10				
							SE-II	10				
							ESE	30				
BP405T	F	Systemic Pharmacology	3	-	-	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II	15				
							ESE	45				
BP406P	F	Herbal Drug Technology	-	-	3	1	CIA	-	-	10	-	50
							SE-I			10		
							SE-II			10		
							ESE			30		
BP407P	F	Medicinal Chemistry	-	-	3	1	CIA	-	-	10	-	50
							SE-I			10		
							SE-II			10		
							ESE			30		
BP408P	F	Pharmaceutical Biotechnology	-	-	3	1	CIA	-	-	10	-	50
							SE-I			10		
							SE-II			10		
							ESE			30		
BP409P	F	Social Pharmacy and Public Health	-	-	2	1	CIA	-	-	10	-	50
							SE-I			10		
							SE-II			10		
							ESE					
BP410P	F	Systemic Pharmacology I	-	-	3	1	CIA	-	-	10	-	50
							SE-I			10		
							SE-II			10		
							ESE			30		
BP411I	E	Internship (Mandatory)	-	-	8	4	-	-	-	-	-	100
TOTAL			24	4	22	23	TOTAL MARKS					700
Total Contact Hours Per Week			36			23						



Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	23	-	-	-			23

L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination

Total Credit Distribution in SY

SEM-III	SEM-IV	TOTAL
25	23	48



BOS Chairman



Dean Academics



Associate Director



Director

Date :- 04-09-2026





Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B. Pharm Semester V

Course Code	Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					TOTAL
			L	T	P	Credit	Scheme	Theory		Practical		
								Max	Min. Passing	Max	Min. Passing	
BP501T	F	Biomedical Chemistry	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP502T	F	Industrial Pharmacognosy	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP503T	F	Innovation and Startup Ecosystem	2	0	0	2	CIA	10	25	-	-	50
							SE-I	10				
							SE-II					
							ESE	30				
BP504T	F	Pharmaceutical Dosage Forms II	2	0	0	2	CIA	10	25	-	-	50
							SE-I	10				
							SE-II					
							ESE	30				
BP505T	F	Pharmaceutical Quality Assurance	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP506T	F	Systemic Pharmacology II	3	0	0	3	CIA	15	38	-	-	75
							SE-I	15				
							SE-II					
							ESE	45				
BP507P	F	Biomedical Chemistry	0	0	4	2	CIA		-	10	25	50
							SE-I			10		
							SE-II					
							ESE	-		30		
BP508P	F	Industrial Pharmacognosy	0	0	3	1	CIA		-	10	25	50
							SE-I			10		
							SE-II					
							ESE	-		30		
BP509P	F	Pharmaceutical Dosage Forms II	0	0	3	1	CIA		-	10	25	50
							SE-I			10		
							SE-II					
							ESE	-		30		
BP510P		Systemic Pharmacology	0	0	4	2	CIA			10	25	50



		II					SE-I	-	-	10		
							SE-II					
							ESE			30		
TOTAL			16	0	14	22	TOTAL MARKS					650
Total Contact Hours Per Week			30									

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	22	-	-	-			22

L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination



BOS Chairman



Dean Academics



Associate Director



Director

Date :- 04-09-2026





Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B.Pharm Semester VI

Course Code		Course Domain	Course Name	Teaching Scheme				Evaluation Scheme				Total		
				L	T	P	Credit	Scheme	Theory		Practical			
									Max.	Min. Passing	Max.	Min. Passing		
BP601T	F	Advanced Pharmacognosy	3	0	0	3	CIA	15	38		-	-	75	
							SE-I	15						
							SE-II							
							ESE	45						
BP602T	F	Biopharmaceutics and Pharmacokinetics	3	0	0	3	CIA	15	38		-	-	75	
							SE-I	15						
							SE-II							
							ESE	45						
BP603T	F	Intellectual Property Rights	2	0	0	2	CIA	10	25		-	-	50	
							SE-I	10						
							SE-II							
							ESE	30						
BP604T	F	AI applications in Pharmaceutical Sciences	2	0	0	2	CIA	10	25		-	-	50	
							SE-I	10						
							SE-II							
							ESE	30						
BP605T	F	Pharmaceutical Analysis	3	0	0	3	CIA	15	38		-	-	75	
							SE-I	15						
							SE-II							
							ESE	45						
BP606T	F	Pharmaceutical Jurisprudence	3	0	0	3	CIA	15	38		-	-	75	
							SE-I	15						
							SE-II							
							ESE	45						
BP607T AEC*	BP607T AEC1	F, E,R	Green Chemistry	1	0	0	1	CIA	10				25	50
	BP607T AEC2		Materiovigilance and Hemovigilance					SE-I	10					
	BP607T AEC3		Scientific Writing					SE-II						
	BP607T AEC4		Drug Store and Business Management					ESE	30					
	BP607T AEC5		Career Building in Cultivation of Medicinal Plants											
	BP607T AEC6		Active Pharmaceutical Ingredients and Excipient Sciences											
BP608P		F	Biopharmaceutics and Pharmacokinetics	0	0	0	1	CIA	-	-	10	25	50	



			Pharmacokinetics					SE-I			10		
								SE-II			30		
								ESE			10		
BP609P		F	Pharmaceutical Analysis	0	0	4	2	CIA	-	-	10	25	50
								SE-I			10		
								SE-II			10		
								ESE			30		
BP610P SEC*	BP610P SEC1	F	Computer-Aided Drug Design	0	0	2	1	-	-	-	10	25	50
	BP610P SEC2		Analytical Method Development and Validation								10		
	BP610P SEC3		Principles of Preclinical Studies								30		
BP611P VAC1*	BP611P VAC1	F,E	Professional Skills	0	0	2	1	-	-	-	10	25	50
	BP611P VAC12		Process Analytical Technology and QbD in Formulation Science					SE-I			10		
								SE-II			30		
BP612I		F,E	Internship (Mandatory)	0	0	8	4						100
TOTAL				17	0	11	26	TOTAL MARKS					750
Total Contact Hours Per Week				28									

***Elective**

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	23	1	1	1	-	-	26

L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination

Total Credit Distribution in TY

SEM-V	SEM-VI	TOTAL
22	26	48

BOS Chairman

Dean Academics

Associate Director

Director

Date :- 04-09-2026





Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B. Pharm Semester VII

Course Code		Course Domain	Course Name	Teaching Scheme				Evaluation Scheme					TOTAL
				L	T	P	Credit	Scheme	Theory		Practical		
									Max.	Min. Passing	Ma x.	Min. Passing	
BP701T		F	Biostatistics Research methodology	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II							
						ESE	45						
BP702T		F	Cosmetics and Cosmeceuticals	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II							
						ESE	30						
BP703T		F	AI in Clinical applications	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II							
						ESE	30						
BP704T		F	Modern Analytical Techniques	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II							
						ESE	45						
BP705T		F	Pharmacovigilance	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II							
						ESE	45						
BP706T		F	Pharmacy Practice	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II							
						ESE	45						
BP707T		F	Regulatory Affairs	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II							
						ESE	30						
BP708T AEC *	BP708T AEC1	F	Current Good Manufacturing Practices	1	0	0	1	CIA	10	25	-	-	50
	BP708T AEC2		Pharmaceutical Automation					SE-I	10				
	BP708T AEC3		Modern Techniques in Cellular Biology					SE-II					
	BP708T AEC4		Medical Devices						30				
	BP708T		Transformation of Food Waste into					ESE					



	AEC5		Medicinal Products										
	BP708T AEC6		Biosimilars, Vaccines & Macromolecules										
	BP708T AEC7		Precision Medicine										
BP709P	F	Modern Analytical Techniques	0	0	3	1	CIA	-	-	10	25	50	
							SE-I			10			
							SE-II			30			
							ESE						
BP710RP	R	Research Project	0	0	0	6	-	-	-	-		150	
TOTAL			19	0	03	26	TOTAL MARKS					700	
Total Contact Hours Per Week			22										

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	19	-	-	1	-	6	26

BOS Chairman

Date :- 04-09-2026



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

B.Pharm Semester VIII

Course Code		Course Domain	Course Name	Teaching Scheme				Evaluation Scheme				Total	
				L	T	P	Credit	Scheme	Theory		Practical		
									Max.	Min. Passing	Max.		Min. Passing
BP801T		F	Ethical Considerations and Translational Applications of AI in Pharmacy	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II	10						
						ESE	30						
BP802T		F	Clinical Pharmacotherapeutics	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II	10						
						ESE	30						
BP803T		F	Industrial Pharmacy and Facility Design	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II	15						
						ESE	45						
BP804T		F	Pharmaceutical Management	2	0	0	2	CIA	10	25	-	-	50
						SE-I	10						
						SE-II	10						
						ESE	30						
BP805T		F	Sterile Dosage Form and Novel Drug Delivery System	3	0	0	3	CIA	15	38	-	-	75
						SE-I	15						
						SE-II	15						
						ESE	45						
BP806T AEC1*	BP806T AEC1	F,E	Pharmaceutical Packaing	2	0	0	2	CIA	10	25	-	-	50
	BP806T AEC2		Supply Chain Management					SE-I	10				
	BP806T AEC3		Industrial Safety and Waste Management					SE-II	10				
	BP806T AEC4		Traditional Healing Practices of India					ESE	30				
	BP806T AEC5		Futuristic Pharma through AR/VR: Pharma 4.0										
	BP806T		Herbal Cosmetics for										



	AEC6		Industry Perspective											
BP807P	F	Pharmaceutical Marketing Skills	0	0	2	1	CIA	-	-	10	25	50		
							SE-I			10				
							SE-II			30				
							ESE							
BP808P	F	Sterile Dosage Form and Novel Drug Delivery System	0	0	4	2	CIA	-	-	10	25	50		
							SE-I			10				
							SE-II			30				
							ESE							
BP809P VAC*	BP809P VAC1	F	Cleaning Validation	0	0	2	1	CIA	-	-	10	25	50	
	BP809P VAC2		Basic Training in Aseptic Handling Techniques					SE-I			10			
	BP809P VAC3		Impurity Profiling					SE-II			30			
								ESE						
BP810RP		R	Research Project				6	-	-	-	-	-	150	
TOTAL				14	0	8	24	TOTAL MARKS					650	
Total Contact Hours Per Week				22										

*Elective

Course Category	Programme Core Course	Value Education	Skill Enhancement Course	Ability Enhancement Course	Internship	Project	Total
	PC	VE	SEC	AEC	IR	RP	
Credit	15	1	-	2	-	6	24

L: - Lecture, T: - Tutorial, P: - Practical, CIA:-Continuous Internal Assessment, SE: - Sessional Examination, ESE: - End Semester Examination

Total Credit Distribution in Final Year

SEM-VII	SEM-VIII	TOTAL
26	24	50



Total Credit in B. Pharm

SEM-I	SEM-II	SEM-III	SEM-IV	SEM-V	SEM-VI	SEM-VII	SEM-VIII	*Co-curricular course/ Activity	TOTAL
21	26	25	23	22	26	26	24	02	195

* Completion of this activity is mandatory during semester V to VIII.


BOS Chairman


Dean Academics


Associate Director


Director

Date :- 04-09-2026





Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP101T, Basics of Python Programming for Pharmaceutical Sciences
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	02/00
Credits	02
Evaluation Scheme: CIA/SE/ESE	10/10/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP101T_1	Explain the fundamentals of Python programming, including variables, data types, operators, and libraries.	L2
BP101T_2	Analyze program logic using control structures and functions.	L4
BP101T_3	Organize, manipulate, and retrieve data using data structures and file handling techniques.	L4
BP101T_4	Analyze pharmaceutical datasets using Python libraries.	L4
BP101T_5	Visualize and interpret pharmaceutical data using graphical tools.	L2

Course Contents:		30 Hrs
Unit 1	Introduction to Python programming • Installing Python and an Integrated Development Environment (IDE) [Jupyter Notebook, PyCharm, VS Code etc.], Advantages of IDEs over text editors. • Python variables and data types (integers, floats, strings, booleans), Type casting and basic operators (arithmetic, comparison, logical), Input and output operations. • Basic string operations and manipulation techniques. Introduction to standard libraries and third-party libraries, installing and uninstalling libraries.	06 Hrs.
Unit 2	Control Structures & Functions • Conditional statements (if, if-else, if-elif-else), nested conditions • Loops (for loop, while loop). • Break and continue statements. • Defining and calling functions, passing arguments and returning values. • Writing modular programs for simple pharmaceutical applications- dosage calculation and BMI calculation.	06 Hrs.
Unit 3	Data Structures & File Handling • Lists, tuples, and dictionaries. • Indexing and slicing lists, basic operations on lists and dictionaries, string	06 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	manipulation techniques. • Introduction to NumPy arrays, basic operations using NumPy (array creation, arithmetic operations). • Reading and writing CSV files. • Understanding structured healthcare datasets. • Importing small pharmaceutical datasets and performing basic data access and manipulation tasks.	
Unit 4	Data Handling with Pandas • Introduction to Pandas library. • Pandas Series and DataFrame structures. • Reading CSV and Excel files-PK study datasets and ADR reports • Inspecting datasets using functions such as head(), tail(), info(), and describe(). • Data cleaning techniques and handling missing values. • Filtering and selecting data based on conditions. • Grouping data and performing aggregation functions.	06 Hrs.
Unit 5	Data Visualization with Matplotlib • Introduction to Matplotlib. • Creating line plots, histograms, scatter plots, and box plots. • Labeling axes, titles, and legends. • Create plots and visualize pharmaceutical datasets - concentration-time curves for oral and IV administration, ADR reporting rates across drugs, dissolution profiles. • Scientific interpretation of plots.	06 Hrs.

Text Books

Sr. No	Title	Author	Publisher
1.	Introduction to Computing Using Python: An Application Development Focus.	Perkovic, L.,	Hoboken: Wiley.
2.	Python Programming: Using Problem Solving Approach	Reema Thareja	Oxford University Press India
3.	Core Python Programming	R. Nageswara Rao	Dreamtech Press
4.	Python Programming: A Modern Approach	Vamsi Kurama	Pearson India
5.	Python for Data Analysis	Wes McKinney	O'Reilly Media
6.	Python Crash Course	Eric Matthes	No Starch Press

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Reference Books

Sr. No.	Title	Author	Publisher
1	Scientific Computing for Chemists with Python	Weiss, C.J.,	Charles J. Weiss
2	Automate the Boring Stuff with Python.	Sweigart, A.,	
3.	Learning Python	Mark Lutz	O'Reilly Media
4.	Think Python	Allen B. Downey	O'Reilly Media
5.	Python Data Science Handbook	Jake VanderPlas	O'Reilly Media

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Python for Everybody Specialization	Dr. Charles R. Severance (University of Michigan)	Coursera	https://www.coursera.org/specializations/python
2	Google Data Analytics Professional Certificate	Google Career Certificates	Coursera	https://www.coursera.org/professional-certificates/google-data-analytics
3	Complete Python Bootcamp: From Zero to Hero in Python	Jose Portilla	Udemy	https://www.udemy.com/course/complete-python-bootcamp
4	Python for Data Science and Machine Learning Bootcamp	Jose Portilla	Udemy	https://www.udemy.com/course/python-for-data-science-and-machine-learning-bootcamp
5	Python Basics for Data Science	IBM Skills Network	edX	https://www.edx.org

Member Secretary



BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP102T, General Pharmacy
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: CIA/SE/ESE	15/15/45

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP102T_1	Describe the history and evolution of the pharmacy profession, including pharmacopeial practices and prescription handling	L2
BP102T_2	Perform accurate pharmaceutical calculations required in the formulation and preparation of various types of dosage forms	L3
BP102T_3	Analyze the properties and functions of active pharmaceutical ingredients (APIs) and excipients, and examine the methods of Preparation of solid dosage forms to determine their suitability for different pharmaceutical formulations.	L4
BP102T_4	Illustrate the formulation principles of liquid dosage forms by analyzing the role of APIs and excipients involved.	L3
BP102T_5	Compare and evaluate the formulation of semisolid dosage forms based on the characteristics of APIs, excipients, and preparation methods.	L4

Course Contents:		45 Hrs.
Unit 1	Introduction to the Profession of Pharmacy • History of the Profession of Pharmacy in India: In relation to pharmacy education, pharmaceutical industries and organizations – evolution, development and milestones. • Scope of the Pharmacy Profession: Role and responsibilities of pharmacists in retail/community pharmacy, hospital and clinical pharmacy, and industrial pharmacy including research and development. • Pharmacopoeias: Introduction to IP, BP, USP, BPC, International Pharmacopoeia, other pharmacopoeias and the National Formulary of India; structure and content of the Indian Pharmacopoeia; study of one model IP Monograph. • Introduction to Prescription: Structure and format/parts of prescription, handling of prescriptions, Latin terminology related to prescriptions.	09 Hrs.
Unit 2	Pharmaceutical Calculations • Metric system of weights and measures; calculations based on alligation, proof spirit, isotonic solutions, dilute solutions (percentage and ratio) and geometric dilution; scientific notation of units and measures. • Posology: Definition and dose calculation based on age, body weight and body surface area. • Introduction to Dosage Forms: Routes of administration and classification of dosage forms. • Introduction to Active Pharmaceutical Ingredients and Excipients: Definition, ideal characteristics and importance.	09 Hrs.


 Member Secretary




 BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Unit 3	Solid Dosage Forms • Powders: Classification, advantages and disadvantages; dusting powders, effervescent powders, efflorescent powders, hygroscopic powders and eutectic mixtures; introduction to excipients and methods of preparation. Tablets: Definition, types of tablets including moulded tablets and pills with examples; advantages and disadvantages; introduction to excipients and methods of Preparation. Capsules: Definition, types of capsules, advantages and disadvantages, capsule sizes; introduction to excipients and methods of preparation.	09 Hrs.
Unit 4	Monophasic and Biphasic Liquids • Introduction about Solution For internal use – aromatic waters, syrups, elixirs and linctus (definition and preparation). For external use and body cavities – liniments, lotions, throat paints, applications, gargles, mouthwashes, enemas, eye drops, ear drops, nasal drops and tinctures with examples. • Study of official preparations; introduction to excipients and methods of preparation. • Suspensions- Definition and types (flocculated and deflocculated), advantages and disadvantages, formulation excipients and general methods of preparation. • Emulsions- Definition and types, emulsifying agents, tests for identification of types of emulsions, formulation excipients and general methods of preparation.	09 Hrs.
Unit 5	Semisolid Dosage Forms • Definitions, classification, advantages and disadvantages, ointment bases and other excipients used in semisolid dosage forms; general methods of preparation of ointments, pastes, creams and gels. • Suppositories / Pessaries: Definition, types of suppositories, advantages and disadvantages, formulation excipients used in suppositories, properties of ideal suppository bases, types of suppository bases, displacement value and general method of preparation.	09 Hrs.

Text Books

Sr. No	Title	Author	Publisher
1.	A Textbook of Pharmaceutics-I	C.V.S. Subrahmanyam	Vallabh Prakashan
2	Textbook of Pharmaceutics	R.M. Mehta	Vallabh Prakashan
3	Dispensing Pharmacy	R.M. Mehta	Vallabh Prakashan
4	Pharmaceutics – The Science of Dosage Form Design	Michael E. Aulton & Kevin M.G. Taylor	Elsevier
5	Pharmaceutics – The Science of Dosage Form Design	Michael E. Aulton & Kevin M.G. Taylor	Elsevier

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Reference Books

Sr. No.	Title	Author	Publisher
1	Lachman's The Theory and Practice of Industrial Pharmacy	Leon Lachman, Herbert A. Lieberman & Joseph L. Kanig	CBS Publishers & Distributors Pvt. Ltd. (Indian Reprint)
2	Dispensing for Pharmaceutical Students.	Carter, S.J., Cooper and Gunn's	CBS Publishers, New Delhi
3	Remington: The Science and Practice of Pharmacy	Gennaro, A.R., Remington	Lippincott Williams & Wilkins, New Delhi.
4	Indian Pharmacopoeia	Indian Pharmacopoeia Commission	Indian Pharmacopoeia Commission(IPC)
5	Modern Pharmaceutics	Gilbert S. Banker & Christopher T. Rhodes	CRC Press

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Introduction to Drug Development	University of California San Diego Faculty	Coursera	https://www.coursera.org/learn/drug-development
2	Pharmacy Practice and Clinical Pharmacy	Industry Experts	Udemy	https://www.udemy.com
3	Indian Pharmacopoeia Resources	Indian Pharmacopoeia Commission (IPC)	IPC	https://www.ipc.gov.in
4	Pharmaceutical and Medicinal Chemistry	NPTEL Faculty	SWAYAM	https://onlinecourses.swayam2.ac.in


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP103T, Healthcare Psychology and Communication Skills
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	01/00
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP103T_1	Explain the fundamental concepts of psychology and their relevance in healthcare settings.	L2
BP103T_2	Describe the stages of human development, personality traits, and behavioral responses associated with illness and recovery.	L2
BP103T_3	Apply effective communication models and techniques in clinical and interdisciplinary healthcare scenarios.	L3
BP103T_4	Demonstrate professional communication skills including active listening, empathetic interaction, and accurate clinical documentation.	L3
BP103T_5	Analyze psychological and behavioral interventions that promote mental health, treatment adherence, and stigma reduction.	L4

Course Contents:		15 Hrs.
Unit 1	Introduction to Psychology in Healthcare: Definition, scope, and relevance of psychology in health sciences. Branches of psychology with healthcare relevance: clinical, health, behavioural, and developmental psychology. Sensation, perception, and attention in clinical assessment. Learning and memory: reinforcement in health behaviour change. Emotion and motivation: theories and implications in health contexts.	03 Hrs
Unit 2	Developmental and Behavioural Psychology: Human developmental stages and healthcare needs. Personality theories and patient interaction styles. Psychological factors affecting illness perception and recovery. Common psychological disorders in healthcare: anxiety, depression, and somatization. Coping strategies, resilience, and stress management techniques.	03 Hrs
Unit 3	Foundations of Health Communication: Elements and models of communication in healthcare. Types of communication: interpersonal, group, mass, and telehealth communication. Barriers to effective communication in clinical settings. Active listening, questioning techniques, and empathy. Culturally appropriate and inclusive communication.	03 Hrs
Unit 4	Professional Communication in Healthcare Settings: Communication	03 Hrs


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	with patients, caregivers, and interdisciplinary teams. Delivering difficult news and handling emotionally charged situations. Legal and ethical issues in health communication (confidentiality, consent). Writing patient records, reports, and discharge summaries. Use of technology and digital communication tools in healthcare services.	
Unit 5	Health Psychology and Behavioural Interventions: Health belief models and illness behaviour. Psychosomatic illnesses and the mind-body connection. Behaviour change theories (e.g., CBT, TTM) in treatment adherence. Psychological first aid and crisis communication. Mental health promotion and stigma reduction through communication.	03 Hrs

Text Books

Sr. No	Title	Author	Publisher
1	Park's Textbook of Preventive and Social Medicine	Park, K.,	Banarsidas Bhanot Publishers, Jabalpur.
2	The Handbook of Communication Skills	Hargie, O.	Routledge, London.

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Understanding Psychology	Feldman, R.S.	McGraw-Hill Education, New York.
2	Health Psychology	Taylor, S.E.	McGraw-Hill Education, New York
3	Psychology and the Challenges of Life: Adjustment and Growth	Nevid, J.S., Rathus, S.A. and Greene, B.	Wiley, New York
4	Introduction to Psychology	Atkinson, R.L., Atkinson, R.C., Smith, E.E., Bem, D.J. and Nolen-Hoeksema, S.	Wadsworth Publishing, Belmont
5	Communication Skills for Health Professionals	Kumar, A	Jaypee Brothers Medical Publishers, New Delhi

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	SWAYAM – Introduction to Psychology	Ministry of Education, Government of India	SWAYAM	https://onlinecourses.nptel.ac.in/e-learning/preview/noc23_hs39
2	SWAYAM – Soft Skills and Personality Development	By Prof. T. Ravichandran IIT Kanpur	SWAYAM	https://onlinecourses.nptel.ac.in/e-learning/preview/noc25_hs174
3	OpenWHO – Risk Communication and Community Engagement (RCCE)	World Health Organization	WHO	https://openwho.org/playlist/dedicated/501691/0_4b6j3n03/0_wlhik4bk

Member Secretary


BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP104T, Human Anatomy, Physiology and Pathophysiology I
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	04/00
Credits	04
Evaluation Scheme: CIA /SE /ESE	20/20/60

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP104T _1	Explain the structural organization of the human body, cellular functions, tissue types, cell communication, homeostasis, and the basic mechanisms of cellular injury and adaptation.	L2
BP104T _2	Explain the structure and functions of the integumentary and skeletal systems, muscle contraction and joints, and explain the pathophysiology of wound healing, psoriasis, dermatitis, leprosy, osteoporosis, rheumatoid arthritis, and gout.	L2
BP104T _3	Understand the composition and functions of body fluids, blood and lymphatic systems, mechanisms of haemopoiesis and coagulation, and describe the pathophysiology of inflammation and major haematological disorders.	L2
BP104T _4	Understand the organization and functions of the peripheral nervous system and special sense organs, and explain the pathophysiology of common disorders affecting vision, hearing, balance, smell, and other special senses	L2
BP104T _5	Identify the anatomy and physiology of the cardiovascular system, including cardiac conduction, cardiac cycle, cardiac output, blood pressure and ECG, and describe the pathophysiology of major cardiovascular disorders.	L4


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Contents:		60 Hrs.
Unit 1	Introduction to human body: Cellular and tissue level of organization. Definition and scope of anatomy, physiology and pathophysiology cell. Levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminologies. Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, forms of intracellular signalling- a) Contact-dependent, b) Paracrine, c) Synaptic, d) Endocrine Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues. Basic principles of cell injury and adaptation: Components and types of feedback systems, causes of cellular injury, pathogenesis (cell membrane damage, mitochondrial damage, ribosome damage and nuclear damage), morphology of cell injury – adaptive changes (atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia), cell swelling, intra cellular accumulation and cell death. Definitions of commonly used relevant medical terminologies.	12 Hrs.
Unit 2	Integumentary system and wound healing: Structure and functions of skin. Skin disorders: Psoriasis and dermatitis and pathophysiology of Leprosy. Basic principles of wound healing. Skeletal system and joints: Divisions of skeletal system, types of bones, salient features and functions of bones of axial and appendicular skeletal system. Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction. Structural and functional classification of joints. Diseases of bones and joints: Pathophysiology of rheumatoid arthritis, osteoporosis and gout.	12 Hrs.
Unit 3	Body fluids, blood and lymphatic system: Body fluids, composition and functions of blood, hemopoiesis, formation of haemoglobin, mechanisms of coagulation, blood grouping, Rh factors and transfusion. Lymphatic organs and tissues, lymphatic vessels, lymph formation, Circulation and functions of lymphatic system. Basic mechanism of inflammation and repair: Introduction, classification and pathophysiology of inflammation, mediators of inflammation. Haematological diseases: Pathophysiology of iron deficiency, megaloblastic anaemia (Vit B12 and folic acid), sickle cell anaemia, Thalassemia, hereditary acquired anaemia and haemophilia.	12 Hrs.
Unit 4	Peripheral nervous system Classification of peripheral nervous system: structure and functions of sympathetic and parasympathetic nervous system. Origin and functions of spinal and cranial nerves. Special senses: Organs Structure and functions of eye, ear, nose and tongue. Pathophysiology of special sense disorders- glaucoma, cataract, myopia, otitis externa, otitis media, vertigo and anosmia,	12 Hrs.
Unit 5	Cardiovascular system: Anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heartbeat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram. Pathophysiology of hypertension, cardiac arrhythmias, congestive heart failure, ischemic heart disease (angina, myocardial infarction, atherosclerosis and coronary artery disease).	12 Hrs.


 Member Secretary




 BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher	Edition
1.	Anatomy and Physiology and Health education	S.B.Bhise, A.V.Bhise	Nirali Prakashan	3 rd
2.	Human Anatomy and Physiology I	S.R.Randhawa, Akabra	S.Vikas and Company	2 nd
3.	Textbook of Medical Physiology	Pal G.K	Ahuja Publication	2 nd

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher	Edition
1	Essentials of Medical Physiology	Sembulingam K. and Sembulingam P.	Jaypee Brothers Medical Publishers, New Delhi	6 th
2	Principles of Anatomy and Physiology.	Tortora, G.J. and Grabowski, S.R.	Palmetto, GA, U.S.A.	15
3	Basic Pathology	Lakhani S.R, Dilluy S.A	Hodder Educations.	4 th

Note: Refer latest available editions

E-Learning Resources

Sr. No.	Title	E- Learning Resources rse Instructor	Platform	Web link
1	Human Physiology	Prof. Nishikant Subhedar IISER Pune	NPTEL	https://youtu.be/CoAnFM6bUh8?si=9xKNLFXfveWXujO5


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP105T, Introduction to Pharmacognosy
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: CIA/SE/ESE	15/15/45

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP105T _1	Describe the historical development, classification, and scope of Pharmacognosy.	L2
BP105T _2	Explain cultivation, processing, and conservation techniques for medicinal plants.	L2
BP105T _3	Apply quality evaluation methods to crude drugs using organoleptic, microscopic, and chemical parameters.	L3
BP105T _4	Identify primary and secondary metabolites with their therapeutic relevance.	L4
BP105T _5	Recognize traditional systems of medicine and commonly used phyto-therapeutic agents.	L3

Course Contents:		45 Hrs.
Unit 1	Fundamentals of Pharmacognosy (a) Definition, history, present status, scope and development of pharmacognosy. (b) Sources of drugs: Plants, animals, microbial, marine, mineral and plant tissue culture. (c) Historical milestones in drug discovery: Morphine, quinine, aspirin, warfarin, penicillin, cephalosporin, taxol and artemisinin. (d) Introduction to different herbal / traditional pharmacopoeias: Indian Pharmacopoeia, British Herbal Pharmacopoeia, United States Pharmacopoeia – Herbal Medicines and Dietary Supplements, Ayurvedic Pharmacopoeia of India, Unani Pharmacopoeia of India and American Herbal Pharmacopoeia. (e) Official and non-official; codified and non-codified drugs. Classification of crude drugs: alphabetical, morphological, taxonomical, chemical, pharmacological and chemotaxonomic classification along with their merits and limitations.	10 Hrs.
Unit 2	Cultivation, Collection, Processing and Storage of Drugs of Natural Origin Methods of plant cultivation and Good Agricultural and Collection Practices (WHO / GAP / GCP guidelines) for medicinal plants. Factors influencing cultivation, collection and storage of medicinal plants. Plant hormones and their applications in cultivation of medicinal plants. Application of polyploidy, mutation and hybridization concepts with reference to secondary metabolites. Ex-situ and in-situ conservation and strategies for value addition of medicinal plants. Role of eco-pharmacognosy in sustainable conservation of endangered medicinal plants such as kutki and chirata.	08 Hrs.
Unit 3	Quality Control of Drugs of Natural Origin (WHO Guidelines) Adulteration of	08 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	drugs of natural origin. Evaluation of drugs using organoleptic, microscopic (qualitative and quantitative), physical, chemical and biological methods. Physicochemical parameters: extractive values, moisture content, foreign organic matter, ash values, bitterness value, foaming index, haemolytic potential, swelling index, viscosity, optical rotation, refractive index, acid value and saponification value. DNA barcoding.	
Unit 4	Introduction to Metabolites of Plant Origin Definition and general properties of plant metabolites. Primary and secondary metabolites such as carbohydrates, proteins, lipids, alkaloids, glycosides, flavonoids, tannins, terpenoids, volatile oils and resins. Traditional Systems of Medicine Basic principles of treatment of diseases in different systems of medicine including AYUSH and TCM. Types of dosage forms in AYUSH medicines. Role of pharmacognosy in allopathy and traditional systems of medicine such as AYUSH and TCM.	12 Hrs.
Unit 5	Phyto-therapeutic Agents Biological source, major constituents and uses of the following classes of drugs: • Adaptogens and Immunomodulators: Ashwagandha, Tulsi, Amla • Hepatoprotectives: Milk thistle, Kutki • Cardiovascular drugs: Garlic, Arjuna • Antidiabetics: Gymnema, Fenugreek • Anti-inflammatory and analgesics: Turmeric, Boswellia • CNS drugs: Brahmi • Antimicrobial and antivirals: Giloy, Neem, Andrographis • Gastrointestinal drugs: Psyllium • Dermatological agents: Aloe • Drugs used in women's health: Chasteberry, Shatavari • Respiratory drugs: Vasaka	07 Hrs.

Text Books

Sr. No	Title	Author	Publisher
1.	Textbook of Pharmacognosy.	Wallis, T.E.,	London: J. & A. Churchill Ltd.

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Trease and Evans Pharmacognosy	Evans, W.C.	London: W.B. Saunders & Co.,
2	Pharmacognosy Philadelphia	Tyler, V.E., Brady, L.R. and Robbers, J.E.	Lea & Febiger,
3	WHO traditional medicine strategy Geneva:	WHO	World Health Organization(2002)
4	Quality control methods for medicinal plant materials. Geneva	WHO	World Health Organization (1998).


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

5	WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants. Geneva	WHO	World Health Organization (2003)
---	--	-----	----------------------------------

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Fundamentals of Pharmacognosy, history, classification, sources of drugs	Maram AbdalNasser Taha Shtaya	Udemy	https://www.udemy.com/course/whats-about-pharmacognosy-in-the-globalized-space/?couponCode=UDEAFFHP22025
2	Plant morphology, microscopy, plant tissues, stomata, trichomes	Mohamad Tabbara	Udemy	https://www.udemy.com/course/general-botany-and-pharmacognosy/?couponCode=UDEAFFHP22025
3	Medicinal plant identification	Elizabeth Heck	Udemy	https://www.udemy.com/course/herbalism-medicinal-plants/?couponCode=UDEAFFHP22025
4	Cultivation, harvesting, conservation	Learn Online	Udemy	https://www.udemy.com/course/herbalism-professional-herbalism-certificate-course/?couponCode=UDEAFFHP22025
5	Primary & secondary metabolites	Samo Kreft	Udemy	https://www.udemy.com/course/applied-plant-chemistry-for-herbalists-part-1/?utm_source=chatgpt.com
6.	Role of pharmacognosy in traditional systems of medicines	Sunanda Dattatray Malode	Udemy	https://www.udemy.com/course/role-of-pharmacognosy-in-traditional-systems-of-medicines/#instructor-1
7	Herbal Medicine	Amy Taylor	Coursera	https://www.coursera.org/learn/herbal-medicine
8	Everyday Chinese Medicine	Prof. Vincent Chung	Coursera	https://www.coursera.org/learn/everyday-chinese-medicine
9	Introduction to Pharmacognosy and phytochemistry	Dr. Galvina Pereira	NPTEL	https://nptel.ac.in/courses/103101787


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Course Code and Course Title	BP106T, Pharmaceutical Inorganic and Analytical Chemistry
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: CIA/SE/ ESE	15/15/45

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP106T_1	Identify sources and types of errors in pharmaceutical analysis and impurities products	L2
BP106T_2	Apply concepts of acid-base chemistry, buffer systems with importance of electrolytes	L3
BP106T_3	Describe and differentiate various analytical techniques used in pharmaceutical analysis, including titrimetric methods, and their specific applications in quality assessment.	L2
BP106T_4	Analyze the properties, mechanisms, and therapeutic uses of gastrointestinal agents, radiopharmaceuticals, expectorants, antidotes, and other pharmaceutical compounds, illustrating their roles in therapy and safety considerations.	L4
BP106T_5	Describe the drugs used in expectorants, emetics, haematinics, poison and antidote and astringents.	L2

Course Contents:		45 Hrs.
Unit 1	Introduction to pharmaceutical analysis Different techniques of analysis, Methods of expressing strength of solutions, Primary and secondary standards with examples. Errors Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures. Impurities Definition, types, contents and regulatory importance. Sources and types of impurities in Pharmaceuticals, limit tests for chloride, sulphate, iron, arsenic, lead, heavy metals, and modified limit test for chloride and sulphate.	07 Hrs.
Unit 2	Acid-Base Chemistry and Buffer Systems in Pharmacy Theories and definition of acids & bases, buffers, pH Scale and its significance, Buffer equation, calculation of pH for Buffer solution. Isotonicity and its application in IV Fluids and Ophthalmic Solutions.	08 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	Major extra and intracellular electrolytes Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium chloride and Oral Rehydration Salt (ORS), Physiological acid base balance.	
Unit 3	Acid base titrations Theories of acid base indicators, classification of acid base titrations. Preparation and standardization of titrants viz. hydrochloric acid and sodium hydroxide. Theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves. Assay of Ammonium hydroxide. Non-aqueous titrations Types of solvents used, acidimetric and alkalimetric titration using non aqueous solvents. Preparation and standardization of acidic and basic titrants. Estimation of weakly acidic and basic substances using non aqueous titrants, estimation of Sodium benzoate. Precipitation titrations and gravimetry Principle and steps involved in gravimetric analysis, Mohr's method, Volhard's, Modified Volhard's, Fajans method. Estimation of barium sulphate by gravimetry. Complexometric titrations Classification, metal ion indicators, masking and demasking reagents, preparation and standardization of disodium EDTA. Estimation of Magnesium sulphate and Calcium gluconate*. Redox titrations Concepts of oxidation and reduction, Type of redox titrations viz. Permanganometry, Cerimetry, Iodimetry, Iodometry and titrations with potassium ic	14 Hrs.
Unit 4	Gastrointestinal agents Acidifiers: Sodium acid phosphate and Dilute Hydrochloric acid. Antacids: Ideal properties of antacids, combinations of antacids, Sodium bicarbonate*, Aluminium hydroxide gel*. Agents promote bowel movements: Magnesium hydroxide, Sodium orthophosphate, Sodium Potassium tartrate and magnesium trisilicate. Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations. Radiopharmaceuticals Basics of radioactivity, applications of radioisotopes of Sodium Iodide I-131, Technetium-99m, Cobalt-60, Phosphorus-32 including safe handling, storage, and disposal of radiopharmaceuticals, adhering to regulatory guidelines for safety.	10 Hrs.
Unit 5	Miscellaneous Compounds Expectorants: Potassium iodide, Ammonium chloride*. Emetics: Copper sulphate*, Sodium potassium tartrate. Haematinics: Ferrous sulphate*, Ferrous gluconate. Poison and Antidote: Definition, classification of antidotes, Sodium thiosulphate	06 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher
1.	Pharmaceutical Analysis I (as per PCI Syllabus)	Dr. K. R. Mahadik & Dr. L. Sathiyarayanan	Nirali Prakashan
2.	Pharmaceutical Analysis I	Dr. Kishor S. Jain, D. K. Kadam & K. P. Baviskar	Nirali Prakashan
3.	Pharmaceutical Analysis I	Dr. Pushpendra Kumar	Nirali Prakashan
4.	Pharmaceutical chemistry Inorganic	Dr. G.R. Chatwal	Himalaya Publishing House

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1.	Vogel's Textbook of Quantitative Chemical Analysis. Essex	Vogel, A.I.	Pearson Education Limited.
2.	Textbook of Pharmaceutical Chemistry. Oxford	Bentley, R. and Driver, J., Bentley and Driver	Oxford University Press.
3.	Practical Pharmaceutical Chemistry. Part I & II. London	Beckett, A.H. and Stenlake, J.B.,	The Athlone Press, University of London.
4.	Indian Pharmacopoeia Commission, Indian Pharmacopoeia. Ghaziabad. India.	Indian Pharmacopoeia Commission	Indian Pharmacopoeia Commission (IPC)

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Basics in Inorganic chemistry	NPTEL	NPTEL	https://nptel.ac.in/courses/104101121
2	Acids and bases	NPTEL	NPTEL	https://www.youtube.com/watch?v=aeLQjdo3tG
3	Buffers	swayam	swayam	https://youtu.be/VFgp7wcjC4M


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

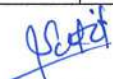
Course Structure:

Class	B. Pharm Sem I
Lab Code and Lab Title	BP107P, General Pharmacy
Prerequisite/s	--
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA/SE/ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP107P_1	Perform accurate pharmaceutical calculations using dilution and allegation principles for the preparation of various dosage forms.	L3
BP107P_2	Prepare and dispense liquid dosage forms such as solutions, syrups, gargles, and mouthwashes following official pharmacopeial procedures	L2
BP107P_3	Formulate solid dosage forms including powders, divided powders, dusting powders, and effervescent granules as per standard guidelines.	L2
BP107P_4	Prepare semisolid and specialized dosage forms such as ointments, liniments, and suppositories using appropriate bases and techniques.	L2
BP107P_5	Compile and evaluate a compendium of marketed dosage forms, demonstrating compliance with pharmacopeial standards, labeling requirements, and patient centric considerations	L4

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Pharmaceutical Calculations Solutions based on allegation and dilution methods	
2	Solutions a) Strong solution of ammonium acetate – IP b) Cresol with soap solution – IP c) Lugol's solution – BPC	
3	Syrups a) Simple Syrup – IP	
4	Powders & Granules a) ORS powder – WHO b) Effervescent granules – IP c) Dusting powder – IP d) Divided powders – IP	
5	Suppositories a) Glycogelatin suppository – BPC b) Cocoa butter suppository – IP c) Zinc Oxide suppository – IP	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

6	Semisolids a) Sulphur ointment – IP b) Non-staining iodine ointment with methyl salicylate – BPC
7	Gargles & Mouthwashes a) Iodine gargle – BPC b) Chlorhexidine mouthwash – IP
Note:	a) Preparation of compendia of dosage forms (marketed products), is recommended. b) Any other practical relevant to the syllabus can be introduced.

***Note- Minimum 12 experiments compulsory**

Text Books

Sr. No	Title	Author	Publisher
1	Pharmaceutics-I Practical Manual	C.V.S. Subrahmanyam	Vallabh Prakashan
2	Textbook of Pharmaceutics	R.M. Mehta	Vallabh Prakashan
3	Dispensing Pharmacy	R.M. Mehta	Vallabh Prakashan

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Remington: The Science and Practice of Pharmacy	David B. Troy & Paul Beringer	Pharmaceutical Press
2	Pharmaceutics – The Science of Dosage Form Design	Michael E. Aulton & Kevin M.G. Taylor	Elsevier
3	Lachman's The Theory and Practice of Industrial Pharmacy	Leon Lachman, Herbert A. Lieberman & Joseph L. Kanig	CBS Publishers & Distributors Pvt. Ltd. (Indian Reprint)
4	British Pharmacopoeia	British Pharmacopoeia Commission	The Stationery Office (TSO), UK
5	Indian Pharmacopoeia	Indian Pharmacopoeia Commission	Indian Pharmacopoeia Commission (IPC), Ghaziabad


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Course Instructor	Platform	Web link
1	Good Pharmacy Practice (GPP)	SWAYAM Faculty	SWAYAM	https://swayam.gov.in
2	Introduction to Drug Development	University of California San Diego Faculty	Coursera	https://www.coursera.org/learn/drug-development
3	Compounding and Dispensing Pharmacy	Industry Expert	Udemy	https://www.udemy.com
4	Pharmaceutics Masterclass: Dosage Forms	Industry Expert	Udemy	https://www.udemy.com

Member Secretary



BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Lab Code and Lab Title	BP108P, Healthcare Psychology and Communication Skills
Prerequisite/s	BP103T, Healthcare Psychology and Communication Skills
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP108P_1	Demonstrate patient-centered communication through role plays and clinical simulations.	L3
BP108P_2	Analyze healthcare communication challenges using case study discussions.	L4
BP108P_3	Practice reflective listening, paraphrasing, and team-based communication strategies.	L3
BP108P_4	Design and deliver effective health education messages for the community.	L6
BP108P_5	Reflect on personal emotional growth and improvement in communication competencies.	L5

List of Experiments

Sr. No.	Title of Experiment	30 Hrs.
1	Role Plays and Simulations Counselling a patient with chronic illness Breaking bad news in a clinical setting Empathetic listening in crisis response	
2	Case Study Discussions Mental health cases in primary care Impact of miscommunication in healthcare errors	
3	Peer-to-Peer Practice Sessions Reflective listening and paraphrasing Effective team communication and decision-making	
4	Community Engagement Tasks Designing IEC materials for public health awareness Conducting mock health education sessions	
5	Journaling & Self-Reflection Logs Weekly reflection on emotional responses during care simulations Growth in communication skill development over the semester	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher
1	Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering	National Cancer Institute	NIH Publications
2	Health Communication: From Theory to Practice	Renata Schiavo	Jossey-Bass (Wiley)
3	Communication Skills for Pharmacists: Building Relationships, Improving Patient Care	Karen J. Tietze	Elsevier
4	Communication Skills in Pharmacy: A Practical Guide for Students and Practitioners	Robert S. Beardsley, Carole L. Kimberlin, William N. Tindall	Wolters Kluwer / Lippincott Williams & Wilkins
5	Pharmaceutical Practice	Duncan Raynor, Paul W. Fleming, Scott Cunningham, et al.	Elsevier

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1.	Introduction to Psychology	Morgan, C.T. and King, R.A.	New York: McGraw-Hill.
2.	Health Psychology	Taylor, S.E	McGraw-Hill Education
3.	Skilled Interpersonal Communication: Research, Theory and Practice	Hargie, O.,	London: Routledge.
4.	Communication in Nursing and Healthcare.	Balzer-Riley, J.	Boston: Pearson.
5.	The Psychology of Health and Illness.	Weinman, J., Petrie, K.J. and Moss-Morris, R.	London: Routledge.

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Author	Publisher	Link
1.	e-PG Pathshala – Communication Studies	Ministry of Education, Government of India	INFLIBNET Centre	https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=HdTs6JFsJhGEa548CrjfKQ==


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

2.	OpenWHO – Risk Communication and Community Engagement (RCCE)	World Health Organization	OpenWHO	https://openwho.org/playlist/dedicated/501691/0_8e5kljir/0_2q00gfhv
3	CDC TRAIN – Health Communication and Public Health	Centers for Disease Control and Prevention (CDC)	-	https://www.train.org/cdctrain/course/1055547/details


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

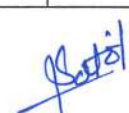
Course Structure:

Class	B. Pharm Sem I
Lab Code and Lab Title	BP109P, Human Anatomy, Physiology and Pathophysiology I
Prerequisite/s	
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA /SE /ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP109P_1	Explain the microscopic features of epithelial, connective, muscular and nervous tissues and demonstrate the use of a compound microscope	L2
BP109P_2	Describe axial and appendicular bones and relate their anatomical features to the human skeletal system.	L2
BP109P_3	Demonstrate basic hematological investigations including RBC count, WBC count, differential count, hemoglobin estimation, ESR, bleeding time, clotting time and blood grouping.	L3
BP109P_4	Discuss physiological parameters such as pulse rate, heart rate, blood pressure and ECG, and relate them to normal cardiovascular function.	L2
BP109P_5	Review of basic clinical case studies related to anaemia, thalassemia, haemophilia, leprosy, gout, hypertension and ischemic heart disease using relevant anatomical, physiological and hematological findings.	L3

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Study of compound microscopes.	
2	Microscopic study of epithelial and connective tissue.	
3	Microscopic study of muscular and nervous tissue.	
4	Identification of axial bones.	
5	Identification of appendicular bones.	
6	Introduction to hemocytometry.	
7	Demonstration of total blood count by cell analyser.	
8	Enumeration and interpretation of white blood cell (WBC) count, differential count.	
9	Enumeration and interpretation of total red blood corpuscles (RBC) count.	
10	Determination of bleeding time and clotting time.	
11	Estimation and interpretation of hemoglobin content.	
12	Determination of blood group.	
13	Determination and interpretation of erythrocyte sedimentation rate (ESR).	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

14	Determination of pulse rate, heart rate and blood pressure.
15	Recording and interpretation of ECG
16	To study Cardiovascular System and integumentary system
17	Case studies/files of patients with anaemia, thalassemia, haemophilia, leprosy, gout, Hypertension and ischemic heart disease. (Any one case study)

***Note- Minimum 12 experiments compulsory**

Text Books

Sr. No	Title	Author	Publisher	Edition
1	Practical Human Anatomy and Physiology	S.R.Kale, R.R.Kale	Nirali Prakashan	5 th
2	Textbook of Medical Physiology.	Pal G.K	Ahuja Publication	2 nd

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher	Edition
1	Anatomy and Physiology in Health and Illness.	Waugh A , Grant A	New York: Churchill Livingstone	1 st
2	Principles of Anatomy and Physiology.	Tortora, G.J. and Grabowski, S.R.,	New York: Wiley.	15 th
3	Anatomy and Physiology in Health and Illness.	Wilson, K.J.W	Elsevier Science	9 th

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Course instructor	Platform	web link
1	Human Physiology	Prof. Nishikant Subhedar IISER Pune	NPTEL	https://youtu.be/CoAnFM6bUh8?si=9xKNLFXfveWXujO5


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Lab Code and Lab Title	BP110P, Pharmacognosy and Phytochemistry
Prerequisite/s	Introduction to Pharmacognosy (BP105T)
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA/SE /ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP110P_1	Identify medicinal plants and crude drugs using morphological and microscopical characters.	L3
BP110P_2	Analyze powdered drugs microscopically to identify diagnostic cell contents	L3
BP110P_3	Perform quantitative microscopy for stomatal and vein parameters.	L4
BP110P_4	Evaluate quality and purity of crude drugs using physicochemical parameters.	L4
BP110P_5	Collect medicinal plants and prepare voucher specimens during field visits.	L4

List of Experiments

Exp. No.	Title of Experiment	45 Hrs.
1	Morphological study of medicinal plants (as mentioned in Unit V Theory)	
2	Organoleptic evaluation and powder microscopical characters of the following drugs: Tulsi and Ashwagandha.	
3	Organoleptic evaluation and powder microscopical characters of the following drugs: Amla and Arjuna.	
4	Organoleptic evaluation and powder microscopical characters of the following drugs: Turmeric and Psyllium husk.	
5	Organoleptic evaluation and powder microscopical characters of the following drugs: Brahmi and Fenugreek.	
6	Determination of moisture content of crude drugs	
7	Determination of Swelling index and foaming index of crude drug	
8	Determination of stomatal number and stomatal index of leaf.	
9	Determination of vein islet and vein termination number of leaf.	
10	Determination of ash value and extractive values of crude drugs.	
11	Determination of foreign organic matter of crude drugs.	
12	Determination of dimensions of calcium oxalate crystals and phloem fibers by eyepiece micrometry.	
13	Determination of dimensions of starch grains by eyepiece micrometer	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

14	Experiential learning-based experiments involving collection, identification of medicinal plant material, preparation of voucher specimens and excursion visits to medicinal plant garden.
----	--

***Note- Minimum 12 experiments compulsory**

Text Books

Sr. No	Title	Author	Publisher
1	Textbook of Pharmacognosy	Wallis, T. E.	London: J. & A. Churchill Ltd.

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Trease and Evans Pharmacognosy.	Trease, G. E. and Evans, W. C.	London: W.B. Saunders & Co.
2	Pharmacognosy	Tyler, V.E., Brady, L.R. and Robbers, J.E.,	Philadelphia: Lea & Febiger.

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Author	Platform	Web link
1	Introduction to Pharmacognosy and phytochemistry	Dr. Galvina Pereira	NPTEL Videos	https://nptel.ac.in/courses/103101787
2	Quality control methods for medicinal plant materials	World Health Organization Geneva	World Health Organization Geneva	https://www.who.int/docs/default-source/medicines/norms-and-standards/guidelines/quality-control/quality-control-methods-for-medicinal-plant-materials.pdf?sfvrsn=b451c7c6_0
3	Plant morphology, microscopy, plant tissues, stomata, trichomes	Mohamad Tabbara	Udemy	https://www.udemy.com/course/general-botany-and-pharmacognosy/?couponCode=UDEAFFHP22025
4	Medicinal plant identification	Elizabeth Heck	Udemy	https://www.udemy.com/course/herbalism-medicinal-plants/?couponCode=UDEAFFHP22025
5	Herbal Medicine	Amy Taylor	Coursera	https://www.coursera.org/learn/herbalmedicine


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem I
Lab Code and Lab Title	BP111P, Pharmaceutical Inorganic and Analytical Chemistry
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA /SE / ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP111P_1	Perform limit tests to detect and identify impurities in pharmaceutical substances.	L3
BP111P_2	Prepare various pharmaceutical inorganic compounds following standard procedures.	L3
BP111P_3	Analyze the significance of quality control in pharmaceutical products and raw materials.	L4
BP111P_4	Demonstrate proficiency in titrimetric analysis using different volumetric techniques.	L3
BP111P_5	Competence in applying analytical skills to qualitative and quantitative data.	L3

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Limit tests (Any 4 Experiments) a. Limit test and modified limit test for Chloride as per Indian Pharmacopoeia b. Limit test and modified limit test for sulphate as per Indian Pharmacopoeia c. Limit test for Iron d. Limit test for Lead e. Limit test for arsenic	
2	Preparation of inorganic pharmaceuticals (Any 3 Experiments) a. Preparation of Aluminium hydroxide b. Preparation of potash alum c. Preparation of ferrous sulphate d. Preparation of Magnesium sulphate from magnesium hydroxide or magnesium carbonate	
3	Test for Purity (Any 2 Experiments) a. Assessment of swelling power of bentonite as per Indian Pharmacopoeia b. Evaluation of acid neutralizing capacity of aluminium hydroxide gel c. Determination of potassium iodate and iodine in potassium Iodide	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

4	Assay of the following inorganic compounds including standardization of titrant (Any 5 Experiments) a. Assay of ammonium chloride by acid base titration, b. Assay of Ferrous sulphate by Cerimetry, c. Assay of Copper sulphate by Iodometry, d. Assay of Calcium gluconate by Complexometry, e. Assay of Hydrogen peroxide by Permanganometry, f. Assay of Sodium benzoate by non-aqueous titration, g. Assay of Sodium Chloride by precipitation titration (Modified Volhard's method)
---	---

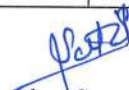
Text Books

Sr. No	Title	Author	Publisher
1	A Textbook of Pharmaceutical Analysis	P. D. Sethi	CBS Publishers & Distributors, New Delhi
2	Pharmaceutical Chemistry – Inorganic (Vol. I)	G. R. Chatwal	Himalaya Publishing House, Mumbai
3	A Practical Book of Pharmaceutical Analysis (FY B.Pharm Semester I – As per PCI Syllabus)	Dr. K. S. Jain & Ms. D. K. Kadam	Nirali Prakashan, Pune

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Textbook of Pharmaceutical Chemistry. Oxford	Bentley, R. and Driver, J., Bentley and Driver	Oxford University Press.
2	Vogel's Textbook of Quantitative Chemical Analysis. Essex	Vogel, A.I.	Pearson Education Limited.
3	Practical Pharmaceutical Chemistry. Part I & II. London	Beckett, A.H. and Stenlake, J.B.	The Athlone Press, University of London
4	Indian Pharmacopoeia Commission, Indian Pharmacopoeia. Ghaziabad. India.	Indian Pharmacopoeia Commission	Indian Pharmacopoeia Commission (IPC)


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Analytical chemistry	NPTEL	NPTEL	https://nptel.ac.in/courses/104105084


Member Secretary




BoS Chairman



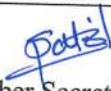
Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP201T, Applied Biostatistics and Data Analytics for Pharmaceutical Sciences
Prerequisite/s	BP101T
Teaching Scheme: Lecture/Tutorial	02/00
Credits	02
Evaluation Scheme: CIA/SE/ESE	10/10/30

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP201T_1	Classify pharmaceutical data using appropriate descriptive statistics.	L2
BP201T_2	Apply probability concepts and statistical distributions in clinical and pharmaceutical contexts.	L3
BP201T_3	Perform sampling and hypothesis testing for decision-making in research.	L3
BP201T_4	Analyze correlation and regression relationships in pharmaceutical datasets.	L3
BP201T_5	Demonstrate statistical analysis using Python and interpret outputs appropriately.	L3

Course Contents:		30 Hrs.
Unit 1	Descriptive Statistics - Types of data in pharmaceutical sciences (<i>nominal</i>, ordinal, interval, ratio) - Sources of data in pharmacy: clinical trials, pharmacovigilance, quality control, PK studies - Measures of central tendency: mean, median, mode, their calculation and interpretation - Measures of dispersion (range, variance, standard deviation) and their interpretation using pharmaceutical data - Skewness and understanding distribution shape in biological measurements - Perform descriptive statistical analysis using Python libraries such as NumPy and Pandas, with focus on Interpretation of results	06 Hrs.
Unit 2	Probability & Statistical Distributions in Healthcare - Basic probability concepts and laws (addition and multiplication rules), conditional probability and its interpretation - Bayes' theorem and its application in clinical decision-making - Concept of random variables (discrete and continuous) - Normal distribution and its importance in biological and pharmaceutical measurements, - Binomial distribution demonstrating applications in clinical trial outcomes - Poisson distribution for modeling rare events such as adverse drug reactions - Graphical visualization of these probability distributions using Python.	06 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Unit 3	Sampling & Statistical Inference • Population versus sample, sampling techniques used in clinical research, Sampling error and bias • Conceptual understanding of the Central Limit Theorem • Confidence intervals and their interpretation • Hypothesis testing framework (null and alternative hypotheses) • Type I and Type II errors, p-value and statistical significance • Demonstration, calculation and interpretation of these parameters using python with pharmaceutical data	06 Hrs.
Unit 4	Basics of Correlation & Regression Conceptual understanding of the following concepts with emphasis on their interpretation- • correlation and Pearson correlation coefficients • Interpretation of positive and negative correlations • Scatter plots and trend visualization using pharmaceutical data such as dose-response relationships • Simple linear regression concept, interpretation of regression coefficients • Introduction to odds ratio and its application in clinical risk analysis	06 Hrs.
Unit 5	Statistical Analysis Using Python – Case based learning • Demonstration of descriptive statistics, correlation analysis and linear regression using Python libraries- SciPy / Statsmodels / Scikit-learn on pharmaceutical datasets • Interpretation of the output summaries and p-values • Preparation of statistical reports	06 Hrs.

Member Secretary



BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher
1	Fundamentals of Biostatistics	Bernard Rosner	Cengage Learning
2	Biostatistics: A Foundation for Analysis in the Health Sciences	Wayne W. Daniel, Chad L. Cross	Wiley India
3	Medical Statistics: A Textbook for the Health Sciences.	Walters, S.J., Campbell, M.J. and Machin, D.,	Hoboken, NJ: Wiley-Blackwell.
4	Python for Data Analysis	Wes McKinney	O'Reilly Media
5	Statistics for Management	Richard I. Levin, David S. Rubin, Siddhartha Rastogi	Pearson India

Note: Refer latest available edition

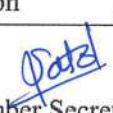
Reference Books

Sr. No.	Title	Author	Publisher
1	Introduction to Statistics	Lane, D.M.	Houston: Rice University
2	Essential Statistics for the Pharmaceutical Sciences	Rowe, P.,	London: Pharmaceutical Press.
3	Pharmaceutical Statistics: Practical and Clinical Applications.	Bolton, S. and Bon, C.,	Informa Healthcare.
4	Basic Statistics and Pharmaceutical Statistical Applications	De Muth, J.E.,	Boca Raton, FL: CRC Press.

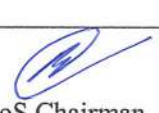
Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Introduction to Python for Data Science	IBM Skills Network	edX	https://www.edx.org/learn/python
2	Python for Everybody Specialization	Dr. Charles R. Severance	Coursera	https://www.coursera.org/specializations/python
3	Applied Data Science with Python Specialization	University of Michigan	Coursera	https://www.coursera.org/specializations/data-science-python


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP202T, Biochemistry
Prerequisite/s	BP104T, BP203T
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: CIA /SE / ESE	15/15/45

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP202T_1	Explain the principles of enzymology and various tests in clinical chemistry.	L2
BP202T_2	Describe biomolecules such as carbohydrates, lipids, nucleic acids, amino acids, proteins & apply principles of bioenergetics, biological oxidation, carbohydrate metabolism and their clinical significance.	L3
BP202T_3	Apply the concepts of lipid metabolism to interpret lipid profiles, explain fatty acid and ketone body metabolism, and correlate abnormalities in lipid metabolism with major lipid-related disorders and their clinical significance.	L3
BP202T_4	Explain metabolism of proteins & Amino Acids with its significance and discuss the monitoring of metabolic and organ-specific disorders.	L2
BP202T_5	Illustrate the Metabolism of Purine & Pyrimidine nucleotides, genetic information transfer (DNA replication, transcription, translation), genetic code, DNA repair mechanisms and correlate their defects with associated clinical disorder.	L3

Course Contents:		45 Hrs.
Unit 1	Enzymology - Introduction, properties, nomenclature, and IUB classification of enzymes and coenzymes. Enzyme kinetics (Michaelis plot, Lineweaver-Burk plot). Enzyme inhibitors with examples. Regulation of enzymes: enzyme induction and repression, allosteric enzyme regulation. - Therapeutic and diagnostic application of enzymes and isoenzymes. Factors affecting enzyme activity. Digestion, absorption function of dietary, Macro and Micronutrients, including Vitamins and Minerals, Biochemical functions of vitamins and associated diseases. - Clinical Chemistry: Liver function tests (routinely performed tests based on liver function). Renal function tests (routinely performed tests based on kidney	10 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	function, ELISA test).	
Unit 2	Introduction about biomolecules • Introduction of carbohydrate, lipids, nucleic acids, amino acids and proteins. • Bioenergetics: Concept of free energy; relationship between free energy, enthalpy, and entropy; redox potential; energy-rich compounds (ATP, GTP, etc.) and their biological significance. • Carbohydrate Metabolism and their role in diabetes mellitus: Overview and significance of major pathways: Glycolysis, Citric Acid Cycle (TCA), Gluconeogenesis, Hexose Monophosphate (HMP) shunt, and Glycogen metabolism; regulation of blood glucose levels; metabolic adaptations during fed state, fasting, and prolonged starvation; metabolic derangements in diabetes mellitus and related disorders. • Biological Oxidation: Electron Transport Chain (ETC), oxidative phosphorylation, and mechanisms of ATP synthesis; regulation and clinical implications of mitochondrial dysfunction and oxidative stress.	10 Hrs.
Unit 3	Lipid metabolism • Classification, functions, and properties of lipids and lipoproteins (HDL, LDL, VLDL, chylomicrons). • β-oxidation and de-novo synthesis of fatty acids: Ketone bodies: synthesis, utilization, and clinical significance. • Biological significance of cholesterol, lipid profile, and its clinical significance. • Disorders associated with lipid metabolism: Hyperlipidaemias and hypercholesterolemia, lipid storage diseases, atherosclerosis, fatty liver disease, and obesity.	07 Hrs.
Unit 4	Amino acids and protein metabolism • Classification and Biological Functions: Classification and physiological roles of amino acids. Structure and functions of proteins and plasma proteins. • General Metabolism of Amino Acids: Transamination, oxidative and non-oxidative deamination, decarboxylation. Urea cycle – nitrogen disposal and detoxification. Fate of carbon skeletons of amino acids (glucogenic vs ketogenic). • Catabolism of Specific Amino Acids and Related Disorders: Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenylketonuria, Albinism, Alkaptonuria, Tyrosinemia) and Inborn errors of branched chain and aromatic amino acids. • Biochemical significance of neurotransmitters and hormones derived from amino acids: 5-HT (serotonin), melatonin, dopamine, noradrenaline, adrenaline. • Catabolism of heme and related disorders (jaundice).	10 Hrs.


 Member Secretary




 BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Unit 5	Nucleic acid metabolism and genetic information transfer - Nucleotide Metabolism and their related disorders: Biosynthesis of purine and pyrimidine nucleotides. Catabolism of purine nucleotides (uric acid formation). Clinical significance of Hyperuricemia and Gout. - Genome Structure and Central Dogma: Organization of the mammalian genome. Introduction to DNA replication, Transcription, and Translation. - Genetic Code and Regulation of Protein Synthesis: Properties of the genetic code: Inhibitors of transcription and translation (antibiotics, toxins). - DNA Repair and Related Disorders: DNA damage types, Repair mechanisms. Overview of clinical disorders associated with faulty DNA repair.	08 Hrs.
---------------	---	---------

Text Books

Sr. No	Title	Author	Publisher
1.	Biochemistry and Clinical Pathology	Dr. S. B. Bhise & Mrs. M. S. Bhise	Nirali

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Lehninger Principles of Biochemistry.	Nelson, D.L., Cox, M.M. and Hoskins, A.,	New York: W.H. Freeman.
2	Harper's Illustrated Biochemistry.	Kennelly, P.J., Rodwell, V.W., Bender, D.A., Botham, K.M. and Weil, P.A.,	New York: McGraw-Hill Education.
3	Harper's Biochemistry.	Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Weil, P.A.,	New York: McGraw-Hill.
4	Biochemistry.	Voet, D. and Voet, J.G.,	New York: John Wiley & Sons.
5	Biochemistry.	Satyanarayana, U. and Chakrapani, U.,	Kolkata: Books and Allied (P) Ltd.
6	Biochemistry.	Stryer, L.,	New York: W.H. Freeman.

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Basic Concepts in Enzymology	Dr. Deepa G. Muricken	Swayam	https://onlinecourses.swayam2.ac.in/e-learning/preview/cec26_cy08
2	Enzyme Science & Technology	Prof. Vishal Trivedi	NPTEL	https://nptel.ac.in/courses/102103097
3	Diabetes Mellitus and Metabolic Alterations	Dr. B. C. Roy	NPTEL	https://www.youtube.com/watch?v=bTf1Iuozk6o
4	Biochemistry	Prof. Swagata Dasgupta	NPTEL	https://nptel.ac.in/courses/104105076


Member Secretary




BoS Chairman



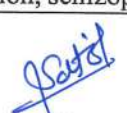
Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP203T, Human Anatomy, Physiology and Pathophysiology II
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	04/00
Credits	04
Evaluation Scheme: CIA /SE / ESE	20/20/60

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP203T_1	Describe the organization, structure and functions of the nervous system, including neurons, nerve fibres, synapses, neurotransmitters, brain, spinal cord and reflex activity, and describe the pathophysiology of major neurological and psychiatric disorders.	L1
BP203T_2	Explain the anatomy and physiological functions of the gastrointestinal system, including digestion, absorption and regulation of gastric secretion, and explain the pathophysiology of major gastrointestinal and hepatic disorders.	L2
BP203T_3	Illustrate the anatomy and physiology of the respiratory and urinary systems, including respiration, gas transport, urine formation, micturition and RAAS, and describe the pathophysiology of major respiratory and renal disorders	L3
BP203T_4	Relate the classification, mechanism of action and physiological functions of major hormones and endocrine glands, and describe the pathophysiology of diabetes mellitus, thyroid disorders, goitre and polycystic ovary syndrome.	L4
BP203T_5	Interpret the anatomy and functions of male and female reproductive systems, reproductive physiology, fertilization, pregnancy and parturition, and explain the pathogenesis of sexually transmitted diseases and cancer	L3

Course Contents:		60 Hrs.
Unit 1	Nervous System a) Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse and neurotransmitters. Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid. Structure and functions of brain (cerebrum, brain stem and cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts, reflex activity). b) Pathophysiology of epilepsy, Parkinson's disease, stroke, migraine, depression, schizophrenia, Alzheimer's disease and meningitis.	14 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Unit 2	Gastrointestinal System a) Anatomy of GI tract with special reference to anatomy and functions of stomach (acid production in the stomach and its regulation through parasympathetic nervous system; role of pepsin in protein digestion). Anatomy and functions of small intestine and large intestine. Anatomy and functions of salivary glands, pancreas and liver. Movements of GIT, digestion and absorption of nutrients. b) Pathophysiology of inflammatory bowel diseases, peptic ulcer, jaundice, hepatitis, typhoid and alcoholic and nonalcoholic fatty liver disease	12 Hrs.
Unit 3	Respiratory System a) Anatomy of respiratory system with special reference to anatomy of lungs. Mechanism of respiration and regulation of respiration. Lung volumes and capacities, transport of respiratory gases, artificial respiration and resuscitation methods. b) Pathophysiology of asthma, chronic obstructive pulmonary diseases, tuberculosis Urinary System a) Anatomy of urinary tract with special reference to anatomy of kidney and nephrons. Functions of kidney and urinary tract. Physiology of urine formation, micturition reflex and role of kidneys in acid-base balance. b) Role of Renin Angiotensin Aldosterone System in kidney. c) Pathophysiology of acute and chronic renal failure and urinary tract infections.	12 Hrs.
Unit 4	Endocrine System a) Classification of hormones and mechanism of hormone action. Structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland and thymus. b) Pathophysiology of diabetes, hypothyroidism, hyperthyroidism, goitre and polycystic ovary syndrome	10 Hrs.
Unit 5	Reproductive System and Cancer a) Anatomy of male and female reproductive system. Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition. b) Pathophysiology of sexually transmitted diseases: AIDS, syphilis and gonorrhea. c) Etiology and pathogenesis of cancer.	12 Hrs.

Text Books

Sr. No	Title	Author	Publisher	Edition
1.	Textbook of Medical Physiology.	Pal G.K	Ahuja Publication Philadelphia, USA.	2 nd
2.	Textbook of Pathology.	Mohan. H	Jaypee Publishers.	6 th

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Reference Books

Sr. No.	Title	Author	Publisher	Edition
1	Anatomy and Physiology in Health and Illness	Wilson, K.J.W., Ross and Wilson	Churchill Livingstone, New York.	14
2	Principles of Anatomy and Physiology	Tortora, G.J. and Grabowski, S.R.	Palmetto, GA, U.S.A.	15
3	Human Physiology (Vol. I & II)	Chatterjee, C.C.	Academic Publishers, Kolkata	11 th
4	Robbins and Kumar Basic Pathology	Kumar, V., Abbas, A.K., Aster, J.C. and Deyrup, A.T.	Elsevier.	10 th

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Human Physiology	Prof. Nishikant Subhedarn IISER Pune	NPTEL	https://youtu.be/CoAnFM6bUh8?si=9xKNLF_XfveWXujO5


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP204T, Pharmaceutical Organic Chemistry
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	04/00
Credits	04
Evaluation Scheme: CIA/SE/ESE	20/20/60

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP204T_1	Describe the chemical reactions and mechanisms of aliphatic saturated hydrocarbons.	L2
BP204T_2	Explain the reactions and mechanisms of aliphatic unsaturated hydrocarbons.	L2
BP204T_3	Understand nucleophilic substitution and elimination reactions of alkyl halides.	L2
BP204T_4	Review electrophilic aromatic substitution reactions and the effect of substituents.	L3
BP204T_5	Apply knowledge of carbonyl compounds and reaction mechanisms in pharmaceutical chemistry.	L3

Course Contents:		60 Hrs.
Unit 1	Aliphatic Saturated Hydrocarbons – Alkanes • Methods of preparation: Wurtz reaction, Kolbe's reaction, Clemmensen reduction, Wolff-Kishner reduction • Chemical reactions of alkanes • Mechanism of free radical substitution (halogenation) • Pharmaceutical applications of alkanes: Liquid paraffin, soft paraffin, hard paraffin Cycloalkanes • Baeyer's strain theory and its limitations • Coulson-Moffitt modification • Sachse-Mohr theory	12 Hrs.
Unit 2	Aliphatic Unsaturated Hydrocarbons – Alkenes • Methods of preparation: o Dehydration of alcohols o Dehydrohalogenation of alkyl halides o Dehalogenation of vicinal dihalides o Wittig reaction • Chemical reactions of alkenes • Mechanism of electrophilic addition reactions • Markovnikov's and anti-Markovnikov's rule • Ozonolysis Conjugated Dienes • Stability of conjugated dienes • Mechanism of Diels-Alder reaction Electrophilic and free radical addition reactions • 1,2- and 1,4-addition reactions	12 Hrs.
Unit 3	Alkyl Halides • Nucleophilic substitution reactions: SN1 and SN2 o Mechanism, kinetics, substrate structure, solvent effect, stereochemistry • Elimination reactions: E1 and E2	12 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	o Mechanism, kinetics, substrate structure, solvent effect, stereochemistry • Zaitsev's (Saytzeff's) rule with examples • Comparison of substitution vs elimination reactions	
Unit 4	Benzene and Its Derivatives – • IUPAC nomenclature of mono- and di-substituted benzene derivatives • Structure of benzene • Molecular orbital picture and resonance • Aromaticity and Hückel's rule • Electrophilic aromatic substitution reactions: o Nitration o Halogenation o Friedel–Crafts alkylation and its limitations o Friedel–Crafts acylation o Sulphonation and desulphonation • Effect of substituents on reactivity and orientation	12 Hrs.
Unit 5	Carbonyl Compounds - Aldehydes and Ketones • Preparation and properties of carbonyl compounds • Nucleophilic addition reactions • Aldol condensation and crossed aldol condensation • Cannizzaro and crossed Cannizzaro reactions • Benzoin and Perkin condensation • Oxidation and reduction reactions • Pharmaceutical applications of carbonyl compounds: Chloral, Paraldehyde, Ketoprofen	12 Hrs.

Text Books

Sr. No	Title	Author	Publisher
1.	Pharmaceutical Organic Chemistry I	K.S. Jain, P.B. Miniyar & L.V.G. Nargund	Nirali Prakashan.
2.	Pharmaceutical Organic Chemistry II	K.S. Jain, P.B. Miniyar & L.V.G. Nargund	Nirali Prakashan.
3.	Pharmaceutical Organic Chemistry II	Abhishek Tiwari, Neeraj Upmanyu & Anup K. Chakraborty	Nirali Prakashan.

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Organic Chemistry.	Morrison, R.T., Boyd, R.N. and Bhattacharjee, S.K.	Pearson Education India.
2	Organic Chemistry, Vol. I.	Finar, I.L.,	Pearson Books.
3	Textbook of Organic Chemistry.	Bahl, B.S. and Bahl, A.,	S. Chand & Company.
4	Vogel's Textbook of Practical Organic Chemistry.	Furniss, B.S.,	Longman Scientific & Technical, London.

Note: Refer latest available editions


 Member Secretary




 BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Named reactions	T. Punniyamurthy	NPTEL/Swayam	https://www.youtube.com/watch?v=Eq1vxDI3QmI&list=PLwdnzlV3ogoVesz5YJoptDLWflrp8OrKH
2	Chemicals from Aromatic Compounds	Dr. Neeraja Dashaputre	NPTEL/Swayam	https://www.youtube.com/watch?v=rzc6tGAUMas


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP205T, Pharmacognosy and Phytochemistry
Prerequisite/s	Introduction to Pharmacognosy (BP105T)
Teaching Scheme: Lecture/Tutorial	04/00
Credits	04
Evaluation Scheme: CIA/SE/ ESE	20/20/60

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP205T_1	Describe biosynthetic pathways and genetic tools involved in phytoconstituent production.	L2
BP205T_2	Classify and explain drugs containing primary and secondary metabolites.	L2
BP205T_3	Apply traditional and modern extraction and isolation methods	L3
BP205T_4	Explain qualitative and quantitative analysis of plant metabolites.	L3
BP205T_5	Evaluate identity, purity, and quality of herbal raw materials	L3

Course Contents:		60 Hrs.
Unit 1	Metabolic Pathways and Biogenetic Studies – Brief study of basic metabolic pathways and biosynthesis of secondary metabolites including: • Shikimic acid pathway • Acetate pathway • Amino acid pathways Utilization of radioactive isotopes in biogenetic studies. Introduction to pathway prediction tools and modern genetic tools such as CRISPR/Cas9.	10 Hrs.
Unit 2	Primary Metabolites – General classification and identification tests Pharmacognostic study (biological source, distribution, identifying characters, chemical constituents, specific tests, therapeutic uses, and commercial applications) of: Carbohydrates: • Acacia, • Agar • Tragacanth • Honey Proteins and Enzymes: • Gelatin • Casein • Proteolytic enzymes: Papain, Bromelain, Serratiopeptidase, Urokinase, Streptokinase, Pepsin Lipids (Waxes, Fats, Fixed Oils): • Castor oil • Olive oil • Cocoa butter • Wool fat • Beeswax	12 Hrs.
Unit 3	Secondary Metabolites – General classification and identification tests Pharmacognostic study (biological source, distribution, cultivation of underlined drugs, identifying characters, chemical constituents, specific tests, therapeutic uses, and commercial applications) of: Alkaloids: • Vinca • Rauwolfia Opium Volatile Oils: • Lemongrass • Clove • Cinnamon • Fennel Tannins: • Myrobalans • Catechu • Pomegranate Resins: • Guggul • Asafoetida Glycosides: • Senna • Liquorice • Digitalis Phenylpropanoids and Flavonoids: • Green Tea • Ginkgo • Flax seed Iridoids, Other Terpenoids and Naphthoquinones: • Gentian • Artemisia	12 Hrs.
Unit 4	Extraction Methods for Medicinal Plants – Conventional Methods of Extraction: • Infusion • Decoction • Digestion • Maceration • Percolation • Reflux • Distillation •	12 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

	Soxhlet extraction • Successive solvent extraction Modern Methods of Extraction: • Supercritical fluid extraction • Microwave-assisted extraction • Ultrasonic-assisted extraction • Enzyme-assisted extraction • Pressurized liquid extraction	
Unit 5	Overview of Isolation, Identification and Characterization Techniques–Separation and Isolation Techniques: • Planar chromatography • Column chromatography • Preparative TLC • Flash chromatography Identification Techniques: • Phytochemical tests • Chromatographic techniques • Spectroscopic techniques Fingerprinting of medicinal plants using TLC/HPTLC. Types and significance of markers (phytochemical reference standards). Screening and analysis of major metabolites: • Alkaloids • Glycosides • Saponins • Tannins • Resins • Flavonoids • Phenolics • Steroids	14 Hrs.

Textbook

Sr. No	Title	Author	Publisher
1.	Textbook of Pharmacognosy	Wallis, T.E.	London: J. & A. Churchill Ltd.

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Trease and Evans Pharmacognosy	Evans, W.C.	London: W.B. Saunders & Co.,
2	Medicinal Natural Products: A Biosynthetic Approach.	Dewick, P.M.	John Wiley & Sons.
3	Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis.	Harborne, J.B.	Chapman & Hall.

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Introduction to Pharmacognosy and phytochemistry	Dr. Galvina Pereira	NPTEL	https://nptel.ac.in/courses/103101787
2	Applied Plant Chemistry for Herbalists: Part 1	<u>Samo Kreft</u>	Udemy	https://www.udemy.com/course/applied-plant-chemistry-for-herbalists-part-1/#instructor-1


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

3	Integrative Health and Medicine Specialization	Robin Austin, DNP, DC	Coursera	https://www.coursera.org/specializations/integrative-health-and-medicine
4	Herbalism: Professional Herbalism Certificate Course	Learn Online	Udemy	https://www.udemy.com/course/herbalism-professional-herbalism-certificate-course/?couponCode=UDEAFFHP22025
5	How to Make Herbal Extracts and Tinctures Step by Step	Reza Moafpoorina	Udemy	https://www.udemy.com/course/how-to-make-herbal-extracts-and-tinctures-step-by-step/?couponCode=UDEAFFHP22025#instructor-1
6	Chromatography Techniques	Ateos Foundation of Science Education and Research	Udemy	https://www.udemy.com/course/chromatography-techniques/?couponCode=UDEAFFHP22025
7	modern and conventional extraction techniques and their applications for extracting phytochemicals from plants	Chibuye Bitwell	Science direct	https://www.sciencedirect.com/science/article/pii/S2468227623000443
8	Extraction, Isolation and Characterization of Bioactive Compounds from Plants' Extracts	S Sasidharan	Pub-Med	https://pmc.ncbi.nlm.nih.gov/articles/PMC3218439/


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Course Code and Course Title	BP206T, Physical Pharmaceutics
Prerequisite/s	-
Teaching Scheme: Lecture/Tutorial	03/00
Credits	03
Evaluation Scheme: CIA/SE/ ESE	15/15/45

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Bloom's Level
BP206T_1	Explain and interpret the fundamental principles governing pharmaceutical manufacturing processes and unit operations	L2
BP206T_2	Analyze physicochemical properties of drugs and excipients and correlate them with formulation stability, quality, and performance	L4
BP206T_3	Apply concepts of interfacial phenomena, colloids, and dispersions in the design and evaluation of pharmaceutical dosage forms	L3
BP206T_4	Evaluate and optimize pharmaceutical processes by controlling variables related to rheology, micromeritics, and dispersion systems	L4
BP206T_5	Demonstrate foundational competency required for advanced studies in formulation development, industrial pharmacy, and pharmaceutical research	L2

Course Contents:		45 Hrs.
Unit 1	Solubility distribution phenomenon & buffers Solubility expression, Solute solvent interactions, Solubility of liquid and liquids, Solubility of solids and liquids, Solubility of Gas in Liquids, Raoult's Law. Factors affecting solubility, Measurement of saturation Solubility, Effect of pH on solubility, Partition Coefficient – Measurement and significance, Critical Solution Temperature and Applications. Introduction to buffers, Buffers in pharmaceutical and biological system, pH determination methods (Electrometry and colorimetry). Buffer equation / Factor influencing the pH of buffer solutions, Factor influencing Buffer capacity, General procedure for preparing buffers, Indicators.	09 Hrs.
Unit 2	Interfacial phenomenon Liquid interface: Surface and interfacial tension, surface free energy, Measurement of surface and interfacial tension, Spreading coefficient, surface active agent, HLB, detergency, types of monolayers at liquid surface. Adsorption at solid interface, Liquid Interface (contact angle, activated charcoal and Wetting). Adsorption of surface-active agents. Electric properties of interface / Electric double layer, Nernst and zeta potential effect of electrolytes	08 Hrs.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Unit 3	Colloidal and Coarse Dispersion Colloidal dispersions: Types of colloidal dispersions (Lyophobic, Lyophilic, Association colloids), Optical properties of colloids, Kinetic properties of colloids, Electrical properties of colloids, Size and shape of colloidal systems, Stability of colloidal system (peptization and protective action), Application of Colloidal System. Coarse Dispersions: Suspensions, stokes law (Theory of sedimentation), Effect of Brownian movement / Sedimentation of flocculated particles, sedimentation parameters. Flocculation and controlled structure flocculation. Theories of emulsification and stabilization (DLVO Theory, Monomolecular adsorption, Multimolecular adsorption, Film formation, Solid particle adsorption). Physical instabilities of emulsions (creaming, coalescence and breaking, and phase inversion).	12 Hrs.
Unit 4	Rheological studies Newtonian systems and non-Newtonian systems. Thixotropy – measurement / Bulges and spurs. Negative thixotropy, Determination of rheological properties (Viscometers / single and multi-point). Viscoelasticity, psycho-rheology. Applications of rheology in pharm	08 Hrs.
Unit 5	Micromeritics Particle size and size distribution, Particle Shape and Surface area: Methods for determination and significance. Flow properties of powders: determination, significance and methods of enhancement. Advanced flow properties of powers (Powder flow tester).	08 Hrs.

Text Books

Sr. No	Title	Author	Publisher
1.	Physical Pharmaceutics	R. M. Mehta	Vallabh Prakashan
2.	Cooper and Gunn's Tutorial Pharmacy	S.J. Carter	CBS Publishers & Distributors
3.	Physical Pharmacy	S. P. Agarwal Rajesh Khanna	CBS Publishers & Distributors
4	Textbook of Physical Pharmaceutics	C. V. S. Subrahmanyam	Vallabh Prakashan, New Delhi

Note: Refer latest available editions

Reference Books

Sr. No.	Title	Author	Publisher
1	Pharmaceutical Dosage Forms and Drug Delivery Systems	Ansel, H.C., Allen, L.V. and Popovich, N.G.,	Lippincott Williams & Wilkins, New Delhi.


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

2	The Science and Practice of Pharmacy.	Gennaro, A.R., Remington	Lippincott Williams & Wilkins, New Delhi.
3	The Theory and Practice of Industrial Pharmacy.	Lachman, L., Lieberman, H.A. and Kanig, J.L.,	CBS Publishers & Distributors
4	Physical Pharmacy	Alfred Martin	Lippincott Williams & Wilkins

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	The Pharmacist Academy	-	National digital library	http://ndl.iitkgp.ac.in/he_document/swayam_ugc_moocs/swayam_ugc_moocs/297_16218_self_learning
2	Solutions and Colloids	-	National digital library	http://ndl.iitkgp.ac.in/he_document/libretexts/libretexts/IN_L_1_C_B_3_L_C_S_12328_G_C_12330_11_S_a_C_24140_34516?e=0 solutions%20and%20colloids


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

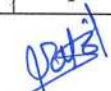
Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP207P, Biochemistry
Prerequisite/s	BP202T
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA /SE / ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP207P_1	Identify proteins and carbohydrates using qualitative biochemical tests and interpret their physiological relevance.	L3
BP207P_2	Detect normal and abnormal constituents in urine and interpret their diagnostic significance.	L4
BP207P_3	Estimate and interpret levels of glucose, cholesterol, urea, creatinine, uric acid, serum proteins, albumin and correlate results with clinical conditions.	L4
BP207P_4	Explain enzyme-substrate reactions and evaluate the effect of temperature and substrate concentration on enzymatic activity.	L3
BP207P_5	Analyze, record, and report biochemical results accurately and relate practical findings to theoretical knowledge and clinical application.	L4

List of Experiments:

Expt. No.	Title of Experiment	45 Hrs.
1	Identification tests for proteins (Albumin and Casein).	
2	Qualitative analysis of carbohydrates* (Glucose, Fructose, Lactose, Sucrose, and Starch).	
3	Qualitative analysis of urine for normal and abnormal constituents.	
4	Estimation of blood glucose.	
5	Estimation of total cholesterol and HDL cholesterol.	
6	Estimation of urea, creatinine, and uric acid in serum.	
7	Estimation of serum total protein and albumin.	
8	Study of enzymatic hydrolysis of starch.	
9	Study of the effect of temperature on salivary amylase activity.	
10	Study of the effect of substrate concentration on salivary amylase activity.	
11	Estimation of hemoglobin in blood by Sahli's method / Cyanmethemoglobin method.	
12	Estimation of serum bilirubin (total and direct bilirubin).	
13	Estimation of glycogen content	
14	Estimation of SGOT and SGPT	
15	Preparation of buffer (Acidic or Basic)	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

*Note- Minimum 12 experiments compulsory

Text Books

Sr. No	Title	Author	Publisher
1	A Practical Book of Biochemistry	Dr. Mrs.P.H. Agarkar Dr.Y.A.Kulkarni Dr.V.L.Maheshwari Dr. S.J.Surana	Nirali
2	Practical Biochemistry	Dr. Mrs.P.H. Agarkar Dr.Y.A.Kulkarni Dr.V.L.Maheshwari Dr.R.A.Fursule	Nirali

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	An Introduction to Practical Biochemistry.	Plummer, D. T.	McGraw-Hill, New York.
2	Principles and Techniques of Biochemistry and Molecular Biology.	Wilson, K., and Walker, J.	Cambridge University Press.
3	Varley's Practical Clinical Biochemistry.	Varley, H., Gowenlock, A. H., Bell, M., and Bell, J. L.	Heinemann Medical Books.
4	Harper's Illustrated Biochemistry.	Rodwell, V. W., Bender, D. A., Botham, K. M., Kennelly, P. J., and Weil, P. A.	McGraw-Hill.
5	Essential Molecular Biology: A Practical Approach.	Freifelder, D.	Oxford University Press.

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Overview of metabolism of Sulfur containing amino acids	Dr. Ravindra Maradi	Swayam	https://dth.ac.in/medical/course-inner.php?id=110
2	Fundamentals of Biochemistry	Prof. Swagata Dasgupta	NPTEL	https://onlinecourses.nptel.ac.in/noc25_cy57/preview?utm_source=chatgpt.com
3	Metabolism of Sulphur containing Amino acids (Methionine and Cysteine)	Prof. Aritri Bir	NPTEL	https://nptel.ac.in/courses/104105139?utm_source=chatgpt.com


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP208P, Human Anatomy, Physiology and Pathophysiology II
Prerequisite/s	
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA /SE / ESE	10/10/30

Course Outcomes (COs) Upon successful completion of this Lab, the student will be able to:		Bloom's Level
BP208P_1	Describe structure and functions of the nervous, respiratory, gastrointestinal, and reproductive systems using specimens, models, and charts.	L1
BP208P_2	Demonstrate and perform basic neurological and sensory examinations, including olfactory function, taste sensation, visual acuity, and reflex activity.	L3
BP208P_3	Understand physiological parameters such as body temperature, tidal volume, vital capacity, and body mass index (BMI) using appropriate methods.	L2
BP208P_4	Explain and interpret reproductive health practices, family planning devices, pregnancy diagnostic tests, and the pathophysiology of common disorders using case studies and case reports.	L4
BP208P_5	Demonstrate and perform basic cardiopulmonary resuscitation (CPR) procedures following standard emergency-response principles	L3

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Study of nervous system using specimens and models.	
2	Study of respiratory system using models.	
3	Study of gastrointestinal system using models.	
4	Study of reproductive system using models.	
5	Demonstration of general neurological examination.	
6	Demonstration of function of olfactory nerve.	
7	Examination of different types of taste.	
8	Demonstration of visual acuity.	
9	Demonstration of reflex activity.	
10	Recording of body temperature.	
11	Determination of tidal volume and vital capacity.	
12	Recording of body mass index (BMI).	
13	Study of family planning devices and pregnancy diagnosis tests.	
14	Understanding pathophysiology of IBD, peptic ulcer, jaundice, hepatitis, typhoid, asthma, tuberculosis, diabetes, and thyroid disorders through case files / case reports.	
15	Hands-on training in cardiopulmonary resuscitation (CPR).	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

***Note- Minimum 12 experiments compulsory**

Text Books

Sr. No	Title	Author	Publisher	Edition
1	Textbook of Medical Physiology.	Pal G.K	Ahuja Publication	2nd

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher	Edition
1	Anatomy and Physiology in Health and Illness.	Wilson, K. J. W., and Waugh A	Churchill Livingstone, New York.	1st
2	The Physiological Basis of Medical Practice.	Best, C. H., and Taylor, N. B.	Williams & Wilkins, Baltimore.	13th
3	Principles of Anatomy and Physiology.	Tortora, G.J. and Grabowski, S.R.,	Palmetto, GA, U.S.A.	15
4	Goodman & Gilman's The Pharmacological Basis of Therapeutics.	Brunton, L., Chabner, B., and Knollmann, B.	McGraw-Hill, New York	14th
5	Davidson's Principles and Practice of Medicine.	Colledge, N. R., Walker, B. R., and Ralston, S.H.	Churchill Livingstone, London.	21st

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Course Instructor	Platform	Web link
1	Human Physiology	Prof. Nishikant Subhedar IISER Pune	NPTEL	https://youtu.be/CoAnFM6bUh8?si=9xKNLFXfveWXujO5


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP209P, Pharmaceutical Organic Chemistry
Prerequisite/s	
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: SE I/SE II / ESE	20/20/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP209P_1	Recall and outline the preliminary qualitative tests used for identifying water insoluble and immiscible organic compounds.	L1
BP209P_2	Understand the synthesis methods for preparing simple organic compounds and their derivatives.	L2
BP209P_3	Apply crystallization techniques to purify organic compounds effectively.	L3
BP209P_4	Analyze experimentally to detect elements and functional groups to identify unknown organic compounds.	L4
BP209P_5	Interpret and analyze organic compounds through systematic qualitative analysis to confirm their chemical nature.	L4

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Systematic qualitative analysis of minimum of five water-insoluble or water immiscible unknown organic compounds from different chemical classes: a. Preliminary tests: Color, odour, Solubility tests, test for aromaticity, test for saturation/unsaturation etc. b. Detection of elements such as nitrogen, sulphur and halogens by Lassaigne's test c. Determination of Functional group tests such as phenols, amides, amines, carboxylic acids, aldehydes and ketones, alcohols, esters, aromatic and halogenated hydrocarbons and nitro compounds. d. Preparation of the derivatives and confirmation of the unknown organic compound by melting point / boiling point.	
2	Building Molecular Models: Students will use ball-and-stick models to create structures of molecules and understand their shapes and bonding.	
3	Crystallization Method Students will learn how to purify three organic compounds using the crystallization technique.	
Note	Minimum 12 experiments to be performed	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher
1.	A Practical Book of Pharmaceutical Organic Chemistry	K.S. Jain, P.B. Miniyar & L.V.G. Nargund	Nirali Prakashan.
2.	Practical Pharmaceutical Chemistry	A.H. Beckett & J.B. Stenlake	CBS Publishers

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Vogel's Textbook of Practical Organic Chemistry	Furniss, B. S., Hannaford, A. J., Smith, P. W. G. and Tatchell, A. R.	Longman Scientific & Technical, London.
2	Practical Organic Chemistry.	Mann, F. G. and Saunders, B. C.	Pearson Education.
3	Elementary Practical Organic Chemistry.	Vogel, A. I.	Longman Group Ltd.

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Course Instructor	Platform	Web Link
	Molecular Modelling	Mukesh Doble	NPTEL	https://youtu.be/3uY5N3rgoLE


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP210P, Pharmacognosy and Phytochemistry
Prerequisite/s	Introduction to Pharmacognosy (BP110P)
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP210P_1	Identify unorganized crude drugs using specific chemical tests	L3
BP210P_2	Analyze organized crude drugs through microscopy and powder analysis.	L3
BP210P_3	Select and perform appropriate extraction methods for herbal drugs.	L4
BP210P_4	Isolate and characterize phytoconstituents using laboratory techniques and TLC.	L4
BP210P_5	Assess and compare the quality and purity of herbal raw materials with official standards.	L4

List of Experiments

Exp. No.	Title of Experiment	45 Hrs.
1	Chemical tests for identification of Agar, Acacia, Tragacanth, Honey.	
2	Chemical tests for identification of Castor oil, Olive oil, Wool fat, Beeswax.	
3	Chemical tests for identification of Asafoetida, Catechu, Aloe	
4	Transverse section and powder microscopy of a vinca leaf.	
5	Transverse section and powder microscopy of a cinnamon bark.	
6	Transverse section and powder microscopy of a fennel fruit.	
7	Transverse section and powder microscopy of a clove flower bud.	
8	Transverse section and powder microscopy of a Tulsi stem.	
9	Transverse section and powder microscopy of a Liquorice roots.	
10	Study of effect on different extraction techniques on yield of crude extract (maceration, decoction, soxhlation).	
11	Isolation of volatile oil and its TLC.	
12	Isolation of caffeine from tea	
13	Isolation of Hesperidin from lemon peel.	
14	Isolation of Glycyrrhizin from liquorice roots	
15	Isolation of Pectin from orange peel.	
16	Experiential learning based experiment involving evaluation and comparison of field/market collected herbal raw materials with Pharmacopoeial standards.	

***Note- Minimum 12 experiments compulsory**


Member Secretary




BoS Chairman

Text Books

Sr. No	Title	Author	Publisher
1	Textbook of Pharmacognosy.	Wallis, T. E.	CBS Publishers & Distributors, New Delhi.

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Pharmacognosy.	Trease, G. E. and Evans, W. C.	Elsevier.
2	Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis.	Harborne, J. B.	Springer.
3	Pharmacognosy.	Tyler, V. E., Brady, L. R. and Robbers, J. E.	Lea & Febiger.

Note: Refer latest available editions

E- Learning Resources

Sr. No	Title	Course Instructor	Platform	Web link
1	Introduction to Pharmacognosy and phytochemistry	Dr. Galvina Pereira	NPTEL Videos	https://nptel.ac.in/courses/103101787
2	Quality control methods for medicinal plant materials	World Health Organization Geneva	World Health Organization Geneva	https://www.who.int/docs/default-source/medicines/norms-and-standards/guidelines/quality-control/quality-control-methods-for-medicinal-plant-materials.pdf?sfvrsn=b451e7c6_0
3	Primary & secondary metabolites	<u>Samo Kreft</u>	Udemy	https://www.udemy.com/course/applied-plant-chemistry-for-herbalists-part-1/?utm_source=chatgpt.com
4	How to Make Herbal Extracts and Tinctures Step by Step	<u>Reza Moafpoorina</u>	Udemy	https://www.udemy.com/course/how-to-make-herbal-extracts-and-tinctures-step-by-step/?couponCode=UDEAFFHP22025#instructor-1
5	Chromatography Techniques	<u>Ateos Foundation of Science Education and Research</u>	Udemy	https://www.udemy.com/course/chromatography-techniques/?couponCode=UDEAFFHP22025

Member Secretary



BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

6	Plant Cell Bioprocessing	Prof. Smita Srivastava II T Madras	NPTEL Videos	https://onlinecourses.nptel.ac.in/e-learning/preview/noc20_bt34
---	-----------------------------	--	-----------------	---


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

10	Determination of solubility of a drug at different pH/buffer systems at room temperature.
11	Determination of partition coefficient of a drug in n-octanol and water system.
12	Determination of partition coefficient of a drug in benzene and water system.
13	Determination of critical solution temperature and composition of phenol–water system.
14	Determination of specific surface area of charcoal by adsorption of acetic acid on activated charcoal.
15	Determination of buffer capacity at various stages of titration of a weak acid against a strong base and determination of pKa.
Note:	Compare the values of various physicochemical properties with marketed formulations wherever possible.

Note- Minimum 12 experiments compulsory

Text Books

Sr. No	Title	Author	Publisher
1	Practical Physical Pharmacy	H. N. More A. A. Hajare	Career publications
2	Physical Pharmaceutics	R. M. Mehta	Vallabh Prakashan
3	Textbook of Physical Pharmaceutics	C. V. S. Subrahmanyam	Vallabh Prakashan, New Delhi
4	Cooper and Gunn's Tutorial Pharmacy	S.J. Carter	CBS Publishers & Distributors

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Pharmaceutical Dosage Forms and Drug Delivery Systems	Ansel, H.C., Allen, L.V. and Popovich, N.G.,	Lippincott Williams & Wilkins, New Delhi.
2	The Science and Practice of Pharmacy.	Gennaro, A.R., Remington	Lippincott Williams & Wilkins, New Delhi.
3	The Theory and Practice of Industrial Pharmacy.	Lachman, L., Lieberman, H.A. and Kanig, J.L.,	CBS Publishers & Distributors
4	Physical Pharmacy	Alfred Martin	Lippincott Williams & Wilkins

Note: Refer latest available editions


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP211P, Physical Pharmaceutics
Prerequisite/s	
Teaching Scheme: Lecture/Tutorial/Practical	0/0/3
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP211P_1	Demonstrate practical knowledge of principles and procedures involved in measuring surface tension, viscosity, density, and related physical properties using standard laboratory apparatus.	L3
BP211P_2	Determine and interpret surfactant-related parameters such as CMC and HLB and explain their significance in formulation stability and performance	L3
BP211P_3	Conduct experiments and analyze results related to sedimentation volume and evaluate the influence of type and concentration of suspending agents on dispersion stability	L4
BP211P_4	Evaluate micromeritic and flow properties of powders by determining particle size distribution, bulk density, tapped density, Hausner ratio, Carr's index, angle of repose, true density, and porosity, and interpret the effect of glidants	L5
BP211P_5	Perform and assess experiments on solubility, partition coefficient, critical solution temperature, adsorption studies, and buffer capacity, and apply findings to formulation decisions	L3

List of Experiments

Sr. No.	Title of Experiment	45 Hrs.
1	Determination of surface tension of given liquids by drop count method and drop weight method.	
2	Determination of critical micellar concentration (CMC) of surfactants.	
3	Determination of viscosity of liquids using Ostwald's viscometer and Brookfield viscometer.	
4	Determination of HLB value of a surfactant.	
5	Calculation of isotonicity by different methods (Sodium Chloride Equivalent Method).	
6	Determination of particle size and particle size distribution using sieving method.	
7	Determination of particle size and particle size distribution using microscopic method.	
8	Determination of densities and derived properties of powders (bulk density, tapped density, Hausner ratio, Carr's compressibility index), true density, and porosity.	
9	Determination of angle of repose and influence of glidants on angle of repose.	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web link
1	Physical Pharmaceutics Virtual Lab – IIT Kanpur	-	Virtual Labs and Practical Simulations	https://www.youtube.com/@ThePharmacistAcademy?utm_source=chatgpt.com
2.	Solutions and Colloids	-	National digital Library	https://www.youtube.com/@ThePharmacistAcademy?utm_source=chatgpt.com


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP212P SEC1 Communication Skills
Prerequisite/s	BP108P, Healthcare Psychology and Communication Skills
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP212P SEC1_1	Demonstrate effective verbal and non-verbal communication in clinical, retail, and academic pharmacy contexts.	L3
BP212P SEC1_2	Perform patient counselling and handle real-world pharmacy interactions using role play and case scenarios.	L3
BP212P SEC1_3	Draft professional emails, prepare patient information leaflets, and create drug labels with clarity and accuracy.	L6
BP212P SEC1_4	Deliver confident oral presentations and communicate complex medical information in a simplified, patient-friendly manner	L4
BP212P SEC1_5	Apply principles of ethical and culturally sensitive communication in handling patients and professional peers.	L3

List of Experiments

Sr. No.	Title of Experiment	30 Hrs.
1	Introduction to Communication in Pharmacy ● Types of communication: verbal, non-verbal, written ● Importance in clinical, academic, and retail pharmacy	
2	Listening and Observation Skills Workshop ● Active listening techniques, barriers to listening ● Observation of cues: patient posture, tone, compliance	
3	Role-play: Communicating with a Patient for Dispensing a Prescription ● Explanation of dosage, frequency, side effects, and precautions	
4	Role-play: Handling Difficult Conversations (e.g., Angry Patient or Confused Elderly) ● Empathy, patience, tone modulation, de-escalation techniques	
5	Written Communication I: Professional Email Writing & Documentation ● Writing emails to doctors, suppliers, institutions ● Structure, etiquette, and clarity in pharmacy communications	
6	Written Communication II: Preparing Patient Information Leaflets and Drug Labels ● Use of simple language, drug facts, precautions, icons ● Creating flyers for common conditions (e.g., diabetes, asthma)	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

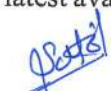
7	Non-verbal Communication Skills ● Body language, eye contact, gestures, tone of voice ● Cross-cultural sensitivity in pharmacy communication
8	Presentation Skills I – Basic Techniques ● Voice projection, clarity, use of visuals ● Individual practice with simple pharmacy topics
9	Presentation Skills II – Group Presentations ● Topics: health awareness campaigns, drug education, OTC safety ● Peer and faculty feedback
10	Patient Counseling Practice (Case-Based) ● Counseling for chronic illness (e.g., hypertension, diabetes) ● Role-playing real-life counseling situations
11	Communicating with Healthcare Professionals ● Case handoff, drug information request, referral writing ● Using SBAR (Situation, Background, Assessment, Recommendation) forma
12	Mock Interview / Group Discussion Practice ● Industry/clinical job interview scenarios ● GD on topics like “Generic vs Branded Medicines”
13	Digital Communication Skills for Pharmacists ● Creating a simple health blog, social media awareness post ● Basics of teleconsultation and ePharmacy chat support
14	Ethics and Professionalism in Communication ● Confidentiality, patient rights, informed consent ● Role-play ethical dilemmas in pharmacy
15	Assessment & Reflection ● Final presentation or counseling demo ● Feedback, self-evaluation, and faculty observation

***Note- Minimum 12 experiments compulsory**

Text Books

Sr. No	Title	Author	Publisher
1	Communication Skills in Pharmacy: A Practical Guide for Students and Practitioners	Robert S. Beardsley, Carole L. Kimberlin, William N. Tindall	Wolters Kluwer / Lippincott Williams & Wilkins
2	Communication Skills for Pharmacists: Building Relationships, Improving Patient Care	Karen J. Tietze	Elsevier
3	Skills for Communicating with Patients	Jonathan Silverman, Suzanne Kurtz, Juliet Draper	CRC Press (Taylor & Francis)
4.	Communication Skills	Dr.Pragati Arora,DR. Varun Arora, Dr. Jagdeep Singh Dua, Davindar Kumar	S.Vikas and Company (medical Publisher) PV Books

Note: Refer latest available edition


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Reference Books

Sr. No	Title	Author	Publisher
1.	Communication Skills in Pharmacy Practice s	E. M. Kelly & S. L. Svarstad,	Lippincott Williams & Wilkins (LWW)
2.	Developing Communication Skills for Pharmacy	Catherine Langford	Pharmaceutical Press
3.	Patient Counselling Guidelines for Pharmacists	WHO India, World Health Organization	- Link https://pmc.ncbi.nlm.nih.gov/articles/PMC10748552/
4.	Communication Skills	Dr. Prashant Kalshetti, Dr. Anuj Kumar Sharma	Thakur Publication Pvt. Ltd.

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Link
1.	Certificate course in counselling skills (ccs)	ICPEM, registered under NITI Aayog, Govt. of India	Mind India	https://www.mindindia.org/education/certificate-course-in-counselling-skills-ccs
2.	Effective Communication Skills for Personal and Professional Development	By Prof. Arti Nirmal, Dr. Neha Pandey Banaras Hindu University	SWAYAM	https://onlinecourses.swayam2.ac.in/e-learning/preview/ini25_ge09
3.	Communication Skills	Dr. T. Ravichandran IIT Kanpur	NPTEL	https://nptel.ac.in/courses/109104030


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP212P SEC2, Mental Well-Being, Stress & Conflict Management(MWB & SCM)
Prerequisite/s	Healthcare Psychology and Communication Skills BP103T
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: CIA/SE /ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP212P SEC2_1	Identify sources and effects of stress in personal and professional life.	L2
BP212P SEC2_2	Apply stress management techniques such as mindfulness, journaling, and relaxation exercises.	L3
BP212P SEC2_3	Utilize conflict management strategies to resolve interpersonal and workplace conflicts.	L3
BP212P SEC2_4	Demonstrate improved emotional intelligence and resilience.	L3
BP212P SEC2_5	Develop effective communication skills for personal and professional growth.	L6

List of Experiments

Sr. No.	Title of Experiment	30 Hrs.
1	Self-assessment of stress levels using Perceived Stress Scale (PSS)	
2	Journaling activity: Maintain a 7-day emotional diary	
3	Mindfulness breathing exercise and reflection	
4	Guided meditation session and feedback form	
5	Time management activity using Eisenhower Matrix	
6	Role-play exercise on workplace conflict resolution	
7	SWOT analysis of personal behavior and coping mechanisms	
8	Cognitive restructuring worksheet for negative thoughts	
9	Group discussion: "How do you respond to stress?"	
10	Conflict styles self-test (Thomas-Kilmann Conflict Mode Instrument)	
11	Visualization technique to reduce anxiety	
12	Progressive muscle relaxation practice	
13	Team activity: Building trust through icebreakers and communication	
14	Reflection report after practicing gratitude for 5 days	
15	Case study analysis: Conflict scenario in a healthcare/pharma setup	

***Note- Minimum 12 experiments compulsory**


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Text Books

Sr. No	Title	Author	Publisher
1	The Relaxation and Stress Reduction Workbook	Martha Davis, Elizabeth Robbins Eshelman & Matthew McKay	New Harbinger Publications
2	Managing Stress: Principles and Strategies for Health and Well-Being	Brian Luke Seaward	Jones & Bartlett Learning
3	The Anxiety and Phobia Workbook	Edmund J. Bourne	New Harbinger Publications
4	The Mindful Way Workbook	John D. Teasdale, Mark Williams, Zindel Segal	Guilford Press

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Positive Psychology	Alan Carr	Perlego
2	Essentials of Psychology	S. K. Mangal	PHI Learning
3	Cognitive Psychology - Connecting Mind, Research, and Everyday Experience	E. Bruce Goldstein	Jain book agency
3	Stress Management for Life: A Research-Based Experiential Approach	Michael Olpin & Margie Hesson	Cengage Learning
4	Crucial Conversations: Tools for Talking When Stakes Are High	Kerry Patterson, Joseph Grenny, Ron McMillan & Al Switzler	McGraw-Hill Education

Note: Refer latest available editions

E- Learning Resources

Sr. No.	Title	Course Instructor	Platform	Web Link
1	Mental Health and Wellbeing	Prof. Santanu Misra, Dr. Oyin Mibang and Team (IIT Kanpur)	SWAYAM (NPTEL)	https://onlinecourses.nptel.ac.in/no_c25_hs109/preview (NPTEL Online Courses)
2	Stress Management	Prof. Rajlakshmi Guha (IIT Kharagpur)	SWAYAM (NPTEL)	https://onlinecourses.nptel.ac.in/no_c26_hs89/preview (Swayam)


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

3	Psychology of Stress, Health and Well-Being	Prof. Dilwar Hussain (IIT Guwahati)	SWAYAM (NPTEL)	https://nptel.ac.in/courses/109103182 (NPTEL)
4	Emotional Intelligence	Prof. Rabindra Kumar Pradhan (IIT Kharagpur)	SWAYAM (NPTEL)	https://nptel.ac.in/courses/109105116 (NPTEL)
5	Psychology of Emotion: Theory and Applications	Prof. Dilwar Hussain (IIT Guwahati)	SWAYAM (NPTEL)	https://onlinecourses.nptel.ac.in/noc26_hs33/preview (NPTEL Online Courses)
6	The Science of Happiness and Wellbeing	Prof. Priyadarshi Patnaik, Prof. Manas K. Mandal (IIT Kharagpur)	SWAYAM (NPTEL)	https://nptel.ac.in/courses/109105199 (NPTEL)
7	Enhancing Soft Skills and Personality	Prof. T. Ravichandran (IIT Kanpur)	SWAYAM (NPTEL)	https://onlinecourses.nptel.ac.in/noc26_hs47/preview (NPTEL Online Courses)
8	Counselling Psychology (BPCE-145)	IGNOU Faculty	SWAYAM	https://onlinecourses.swayam2.ac.in/nou26_hs20/preview (SWAYAM)


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

Course Structure:

Class	B. Pharm Sem II
Lab Code and Lab Title	BP212P SEC3 Fundamentals of Computer Operations
Prerequisite/s	
Teaching Scheme: Lecture/Tutorial/Practical	0/0/2
Credits	01
Evaluation Scheme: CIA/SE/ ESE	10/10/30

Course Outcomes (COs)		Bloom's Level
Upon successful completion of this Lab, the student will be able to:		
BP212P SEC3_1	Demonstrate the ability to operate computer systems and perform basic system and file management functions.	L3
BP212P SEC3_2	Prepare and format digital documents and spreadsheets for academic and pharmaceutical applications.	L3
BP212P SEC3_3	Develop presentations and use digital communication tools for effective professional communication.	L6
BP212P SEC3_4	Access and retrieve scientific information using online databases and academic search platforms.	L4
BP212P SEC3_5	Apply basic computer skills for organizing, analyzing, and managing pharmaceutical data and documentation.	L3

List of Experiments

Sr. No.	Title of Experiment	30 Hrs.
1	Basic operation and navigation of a computer operating system, including system settings and file explorer functions.	
2	Creating, renaming, organizing, moving, and deleting files and folders within a computer system.	
3	Preparing a structured academic or pharmacy-related report using a word-processing application with appropriate formatting, tables, headers, and page layout.	
4	Inserting equations, images, and formatted elements while preparing documents such as reports, notices, or certificates using document editing tools	
5	Creating spreadsheets for pharmacy-related calculations such as dose calculations, inventory records, or sales data using spreadsheet applications.	
6	Applying basic spreadsheet formulas and functions such as summation, averaging, conditional calculations, and counting operations.	
7	Generating graphs, charts, and data visualizations from experimental or pharmaceutical data using spreadsheet tools	


Member Secretary




BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
 An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

8	. Preparing a short academic presentation (approximately five slides) using presentation software with text, images, and basic design elements
9	Performing effective internet browsing and academic search techniques using online scientific literature databases and search platforms
10	Writing and sending professional emails including file attachments, proper subject lines, and appropriate use of CC and BCC with correct communication etiquette.
11	. Introduction to digital systems used in pharmacy practice such as billing, inventory management, or prescription management through demonstration or simulation.
12	Using cloud-based storage platforms for saving, organizing, and sharing academic or pharmacy-related files and data.
13	Exploring digital health technologies such as pharmacy-related mobile applications or electronic health tools used in healthcare practice
14	Accessing and utilizing online learning platforms for professional education and course materials.
15	Preparing and submitting digital assignments using word-processing, spreadsheet, or presentation tools.

Note- Minimum 12 experiments compulsory

Text Books

Sr. No	Title	Author	Publisher
1	Introduction to Computers	Peter Norton's	McGraw-Hill Education
2	Computer Basics Absolute Beginner's Guide	Michael Miller	Que Publishing

Note: Refer latest available editions

Reference Books

Sr. No	Title	Author	Publisher
1	Computer Fundamentals	P. K. Sinha & Priti Sinha	BPB Publications
2	Fundamentals of Computers	V. Rajaraman	PHI Learning Pvt. Ltd.
3	Fundamentals of Computers	Dr. Satish Jagtap, Dr. Reshma Patil	Thakur Publication, pune
4	UNIX Concepts and Applications	Sumitbha Das	McGraw-Hill Education (India) Pvt. Ltd.

Note: Refer latest available editions


 Member Secretary



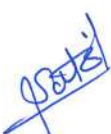

 BoS Chairman



Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF PHARMACY
Department of B. Pharmacy

E- Learning Resources

Sr. No.	Title	Course Instructor / Author	Platform	Web Link
1	Introduction to Computer Basics (E-Book/PDF)	IGNOU	IGNOU eGyanKosh	IGNOU eGyanKosh – Introduction to Computer Basics
2	Fundamentals of Computers	V. Rajaraman & Neeharika Adabala	PHI Learning Pvt. Ltd.	PHI Learning
3	Computer Fundamentals	Ministry of Education	SWAYAM Online Course	SWAYAM
4	Exploring Basic Computer Concepts	Microsoft	Microsoft Learn	Microsoft Learn – Exploring Basic Computer Concepts
5	Microsoft Word Essentials	Microsoft	Microsoft Learn	Microsoft Learn
6	Course on Computer Concepts (CCC)	NIELIT	NIELIT LMS	NIELIT CCC Course
7	Computer Basics and PC Software (E-Book)	IGNOU	IGNOU eGyanKosh	IGNOU BCS-011 Computer Basics and PC Software
8	MS Word (Word Processing Module)	IGNOU	IGNOU eGyanKosh	IGNOU MS Word Study Material


Member Secretary




BoS Chairman