

**Program Structure**

**of**

**Bachelor of Pharmacy  
(B. Pharm.)**

## About the Program

Bachelor of Pharmacy (B.Pharm) is an 4 years undergraduate Course focused on the properties and impacts of pharmaceutical drugs. The programme prepares students to develop the necessary skills to counsel patients about medications and the use of drugs. The curriculum of Bachelor of pharmacy Course at School of Pharmaceutical Sciences, Jigyasa University is designed according to Pharmacy Council of India (PCI) the statutory body governing the pharmacy profession in India.

The course equips students with a profound understanding of human anatomy, drug dosage, drug action and reaction, and active ingredients used in the formulation of the drugs and how to maintain their quality in the storage. Besides, the programme also concentrates on preparing the students and training them for industry-ready holistic pharmaceutical care in the practice setting.

### PEO's - Program Educational Objectives (B. Pharmacy)

1. To produce Pharmacy graduates with vital base concepts and high technical competence in Pharmaceutical Sciences.
2. To bestow students with well defined understanding in the various fields of Pharmacy viz., pharmaceutics, pharmaceutical chemistry, pharmacology and pharmacognosy according to the requirement of pharmaceutical industries, community and Hospital Pharmacy.
3. Promote research in various fields of Pharmaceutical Sciences and implement the knowledge in formulating best suitable medicines for the society
4. Develop a sense of teamwork and awareness amongst students towards the importance of interdisciplinary approach for developing attributes for solving complex problems in the area of Pharmaceutical Sciences.
5. Encourage the students to participate in life-long learning process for a highly productive career and to relate the concepts of Pharmaceutical Sciences towards serving the cause of the society.

### PO's - Program Outcomes (B. Pharmacy)

Level	PO	Outcome
L2	PO1	<b>Pharmacy knowledge: Illustrate</b> knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
L1, L3 & L4	PO2	<b>Problem analysis: State &amp; Utilize</b> the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. <b>Recognize, analyze</b> information systematically and shall make defensible decisions.
L2 & L3	PO3	<b>Development of solutions: Demonstrate</b> effective planning abilities including time management, resource management, delegation skills and organizational skills. <b>Develop</b> and implement plans and <b>organizework</b> to meet deadlines.
L3 & L4	PO4	<b>Conduct investigations of complex problems: Use</b> research-based knowledge including <b>developing</b> experiments, <b>analysis</b> and interpretation of data, and synthesis of the information to provide valid conclusions.

L2, L3 & L5	PO5	<b>Modern tool usage:</b> Choose and Interpret appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations
L3 & L5	PO6	<b>The Pharmacist and Society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice
L4 & L5	PO7	<b>Environment and sustainability:</b> Examine the impact of the professional pharmacy solutions in societal and environmental contexts and Appraise the knowledge and need for sustainable development.
L3, L5 & L6	PO8	<b>Pharmaceutical Ethics:</b> Honor personal values and defend ethical principles in professional and social contexts. Develop behavior that recognizes cultural and personal variability in values, communication and lifestyles. Generate ethical frameworks; Justify ethical principles while making decisions and take responsibility for the outcomes associated with the decisions
L6	PO9	<b>Individual and teamwork:</b> Plan effectively as an individual, and as a member or leader in teams, and gain multidisciplinary knowledge through innovative projects, industrial training.
L5	PO10	<b>Communication:</b> Communicate effectively with the pharmacy community and with society at large, such as, being able to Interpret and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
L3 & L6	PO11	<b>Project management and finance:</b> Acquire knowledge and understanding of Pharmacy and management principles and apply these to one's own work, as a member and leader in a team. Formulate projects in multidisciplinary environments.
L5 & L6	PO12	<b>Life-long learning:</b> Estimate the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-access and interpret feedback effectively from others to predict learning needs and to satisfy these needs on an ongoing basis.

### Program Specific Outcomes (PSOs)

The Graduate shall be able to:

PSO1. Apply the knowledge of pharmaceutical and allied sciences in design, manufacture and evaluation of drug delivery systems including cosmetics.

PSO2. Be able to perform classical and modern analysis of APIs and formulations in their quality control and enforce quality assurance standards.

PSO3. Appreciate the mechanism of action of drugs including their kinetics and adverse actions. Be able to do basic evaluation of bioactivity of drugs in in- silico models.

PSO4. Apply the knowledge of medicinal chemistry, natural drugs in drug design and synthesis. Appreciate the importance of drugs derived from natural sources.

PSO5. Act responsibly towards environment, follow ethical principles, be able to comprehend, interpret and apply laws pertinent to all spheres of pharmaceutical and allied domains.

### Mapping of PEOs & POs in B. Pharm.

Matrix

PO→ PEO ↓	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	*	*	*		*			*			*	
2		*	*	*	*						*	
3		*	*	*	*	*	*	*		*	*	
4					*	*	*		*	*	*	
5						*	*	*	*	*	*	*

## Program Matrix

### B. Pharmacy (B. Pharm.)

S. No	Course Code	Course Name	Category	Numbers of Hours/Week			C
			Core / Elective / Others	L	T	P	
<b>SEMESTER I</b>							
1	BP101T	Human Anatomy and Physiology I	Professional (Core)	3	1	-	4
2	BP102T	Pharmaceutical Analysis I – Theory	Professional (Core)	3	1	-	4
3	BP103T	Pharmaceutics I – Theory	Professional (Core)	3	1	-	4
4	BP104T	Pharmaceutical Inorganic Chemistry – Theory	Professional (Core)	3	1	-	4
5	BP105T	Communication skills – Theory *	Soft Skill	2	-	-	2
6	BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	Professional (Noncore)	2	-	-	2
7	BP107P	Human Anatomy and Physiology – Practical	Professional (Core)	-	-	4	2
8	BP108P	Pharmaceutical Analysis I – Practical	Professional (Core)	-	-	4	2
9	BP109P	Pharmaceutics I – Practical	Professional (Core)	-	-	4	2
10	BP110P	Pharmaceutical Inorganic Chemistry – Practical	Professional (Core)	-	-	4	2
11	BP111P	Communication skills – Practical*	Soft Skill	-	-	2	1
12	BP112P	Remedial Biology – Practical*	Professional (Noncore)	-	-	2	1
Total				16	4	20	27/29 <sup>S</sup> /30
Note: #Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course. \$Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course. * Non University Examination (NUE)							
<b>SEMESTER II</b>							
1	BP201T	Human Anatomy and Physiology II – Theory	Professional (Core)	3	1	0	4
2	BP202T	Pharmaceutical Organic Chemistry I – Theory	Professional (Core)	3	1	0	4
3	BP203T	Biochemistry – Theory	Professional (Core)	3	1	0	4
4	BP204T	Pathophysiology – Theory	Professional (Core)	3	1	0	4
5	BP205T	Computer Applications in Pharmacy – Theory *	Professional (Noncore)	3	-	0	3
6	BP206T	Environmental sciences – Theory *	Professional (Noncore)	3	-	0	3
7	BP207P	Human Anatomy and Physiology II – Practical	Professional (Core)	-	-	4	2
8	BP208P	Pharmaceutical Organic Chemistry I – Practical	Professional (Core)	-	-	4	2
9	BP209P	Biochemistry – Practical	Professional (Core)	-	-	4	2
10	BP210P	Computer Applications in Pharmacy – Practical*	Professional (Noncore)	-	-	2	1
Total				18	4	14	29
Cumulative Total				34	8	34	56/58/59

<b>SEMESTER III</b>							
1	BP301T	Pharmaceutical Organic Chemistry II – Theory	Professional (Core)	3	1	-	4
2	BP302T	Physical Pharmaceutics I – Theory	Professional (Core)	3	1	-	4
3	BP303T	Pharmaceutical Microbiology – Theory	Professional (Core)	3	1	-	4
4	BP304T	Pharmaceutical Engineering – Theory	Professional (Core)	3	1	-	4
5	BP305P	Pharmaceutical Organic Chemistry II – Practical	Professional (Core)	-	-	4	2
6	BP306P	Physical Pharmaceutics I – Practical	Professional (Core)	-	-	4	2
7	BP307P	Pharmaceutical Microbiology – Practical	Professional (Core)	-	-	4	2
8	BP 308P	Pharmaceutical Engineering – Practical	Professional (Core)	-	-	4	2
Total				12	4	16	24
Cumulative Total				46	12	50	80/82/83
<b>SEMESTER IV</b>							
1	BP401T	Pharmaceutical Organic Chemistry III– Theory	Professional (Core)	3	1	-	4
2	BP402T	Medicinal Chemistry I – Theory	Professional (Core)	3	1	-	4
3	BP403T	Physical Pharmaceutics II – Theory	Professional (Core)	3	1	-	4
4	BP404T	Pharmacology I – Theory	Professional (Core)	3	1	-	4
5	BP405T	Pharmacognosy and Phytochemistry I– Theory	Professional (Core)	3	1	-	4
6	BP406P	Medicinal Chemistry I – Practical	Professional (Core)	-	-	4	2
7	BP407P	Physical Pharmaceutics II – Practical	Professional (Core)	-	-	4	2
8	BP408P	Pharmacology I – Practical	Professional (Core)	-	-	4	2
9	BP409P	Pharmacognosy and Phytochemistry I – Practical	Professional (Core)	-	-	4	2
Total				15	5	16	28
Cumulative Total				61	17	66	108/110/111
<b>SEMESTER V</b>							
1	BP501T	Medicinal Chemistry II – Theory	Professional (Core)	3	1	-	4
2	BP502T	Industrial PharmacyI– Theory	Professional (Core)	3	1	-	4
3	BP503T	Pharmacology II – Theory	Professional (Core)	3	1	-	4
4	BP504T	Pharmacognosy and Phytochemistry II– Theory	Professional (Core)	3	1	-	4
5	BP505T	Pharmaceutical Jurisprudence – Theory	Professional (Core)	3	1	-	4
6	BP506P	Industrial PharmacyI – Practical	Professional (Core)	-	-	4	2
7	BP507P	Pharmacology II – Practical	Professional (Core)	-	-	4	2
8	BP508P	Pharmacognosy and Phytochemistry II – Practical	Professional (Core)	-	-	4	2
Total				15	5	12	26
Cumulative Total				76	22	78	134,136/137
<b>Semester VI</b>							
1	BP601T	Medicinal Chemistry III – Theory	Professional (Core) /	3	1	-	4
2	BP602T	Pharmacology III – Theory	Professional (Core) /	3	1	-	4
3	BP603T	Herbal Drug Technology – Theory	Professional (Core) /	3	1	-	4

4	BP604T	Biopharmaceutics and Pharmacokinetics – Theory	Professional (Core) /	3	1	-	4
5	BP605T	Pharmaceutical Biotechnology – Theory	Professional (Core) /	3	1	-	4
6	BP606T	Quality Assurance – Theory	Professional (Core) /	3	1	-	4
7	BP607P	Medicinal chemistry III – Practical	Professional (Core) /	-	-	4	2
8	BP608P	Pharmacology III – Practical	Professional (Core) /	-	-	4	2
9	BP609P	Herbal Drug Technology – Practical	Professional (Core) /	-	-	4	2
			Total	18	6	12	30
			Cumulative Total	94	28	90	164/166/167
<b>Semester VII</b>							
1	BP701T	Instrumental Methods of Analysis – Theory	Professional (Core)	3	1	-	4
2	BP702T	Industrial PharmacyII – Theory	Professional (Core)	3	1	-	4
3	BP703T	Pharmacy Practice – Theory	Professional (Core)	3	1	-	4
4	BP704T	Novel Drug Delivery System – Theory	Professional (Core)	3	1	-	4
5	BP705P	Instrumental Methods of Analysis – Practical	Professional (Core)	-	-	4	2
6	BP706PS	Practice School*	Audit Course	-	-	12	6
			Total	12	4	16	24
			Cumulative Total	106	32	106	188/190/191
<b>Semester VIII</b>							
1	BP801T	Biostatistics and Research Methodology	Professional (Core)	3	1	-	4
2	BP802T	Social and Preventive Pharmacy	Professional (Core)	3	1	-	4
3	BP803ET	Pharma Marketing Management	Elective	3 + 3 = 6	1 + 1 = 2	-	4 + 4 = 8
4	BP804ET	Pharmaceutical Regulatory Science					
5	BP805ET	Pharmacovigilance					
6	BP806ET	Quality Control and Standardization of Herbals					
7	BP807ET	Computer Aided Drug Design					
8	BP808ET	Cell and Molecular Biology					
9	BP809ET	Cosmetic Science					
10	BP810ET	Experimental Pharmacology					
11	BP811ET	Advanced Instrumentation Techniques					
12	BP812ET	Dietary Supplements and Nutraceuticals					
13	BP813PW	Project Work	Project /Internship/Experiential learning*	-	-	12	6
			Total	12	4	12	22
			Cumulative Total	118	36	118	210/212/213
L – Lecture                      T- Tutorial                      P- Practical                      C-Credits 1L = 1Hr                            1T= 1 Hr                            1P=1 Hr                            1C = 1 Hr of Theory Paper per week = 2 Hrs of Practical/Tutorial per week							



**PROGRAM ARTICULATION MATRIX**  
**(PEO – All Course)**

Program Objectives	1	2	3	4	5
Courses					
Human Anatomy and Physiology	★	★			
Pharmaceutical Analysis-I	★	★			
Pharmaceutics-I	★	★			
Pharmaceutical Inorganic Chemistry	★	★			
Communication skills	★	★			★
Remedial Biology	★	★			
Remedial Mathematics	★	★			
Human Anatomy and Physiology-II	★	★			
Organic Chemistry	★		★		
Biochemistry	★	★			
Pathophysiology	★	★			★
Computer Applications in Pharmacy	★	★			★
Environmental sciences		★	★		★
Pharmaceutical Organic Chemistry-II	★		★	★	
Physical Pharmaceutics-I	★	★		★	
Pharmaceutical Microbiology	★	★			
Pharmaceutical Engineering	★	★		★	
Pharmaceutical Organic Chemistry-III	★		★	★	
Medicinal Chemistry-I		★		★	★
Physical Pharmaceutics-I	★	★			
Pharmacology-I	★	★	★		★
Pharmacognosy and Phytochemistry-I	★	★	★		
Medicinal Chemistry-II		★			
Industrial Pharmacy-I		★		★	★
Pharmacology-II	★	★			
Pharmacognosy and Phytochemistry-II	★	★	★		
Pharmaceutical Jurisprudence	★	★			
Medicinal Chemistry- III		★	★	★	
Pharmacology-III	★	★			
Herbal Drug Technology		★	★		★
Instrumental Method of Analysis		★	★	★	
Industrial Pharmacy		★		★	★
Pharmacy Practice-II		★		★	★
Novel Drug Delivery System		★		★	★
Practice School					
Biostatistics and Research Methodology		★	★		★
Social and Preventive Pharmacy		★		★	★
Quality Control and Standardization of Herbals		★	★		
Pharmaceutical Regulatory Science		★		★	★
Pharmacovigilance		★		★	★
Quality Control and Standardization of Herbals	★	★		★	★

Computer Aided Drug Design			★	★	★
Cell and Molecular Biology	★		★		★
Cosmetic Science	★		★	★	
Experimental Pharmacology			★	★	★
Advanced Instrumentation Techniques	★		★	★	★
Dietary Supplements and Nutraceuticals			★	★	
Project Work		★	★	★	★