



# SCHOOL OF MEDICAL & ALLIED SCIENCES

## Bachelor of Pharmacy (B. Pharm.) (4 Years) Undergraduate Course

2023-27



#### Preface

Welcome to the Bachelor of Pharmacy (B. Pharm) programme, a comprehensive academic course designed to prepare students for a rewarding career in the pharmaceutical sciences. The B. Pharm program serves as a foundation for aspiring pharmacists, equipping them with the necessary knowledge, skills, and competencies to contribute to the healthcare industry.

Pharmacy is a vital healthcare profession that focuses on the effective and safe use of medications. Pharmacists play a crucial role in the healthcare system by working collaboratively with other healthcare professionals to optimize patient care, ensure proper medication management, and promote wellness. As a pharmacist, one will have the opportunity to positively impact individual's lives and contribute to the overall well-being of communities.

The B. Pharm program aims to provide students with a strong academic foundation in pharmaceutical sciences, clinical pharmacy, pharmaceutical technology, and related disciplines. Through a comprehensive curriculum, students will gain in-depth knowledge about drug discovery, drug formulation, drug delivery systems, pharmacology, pharmacokinetics, pharmaceutical analysis, and pharmacy practice. The program also emphasizes the development of critical thinking, problem-solving, communication, and professional skills necessary for effective pharmacy practice.

Throughout your B. Pharm journey, one will engage in a combination of classroom lectures, laboratory experiments, practical training, and clinical rotations. These learning experiences will help you develop a deep understanding of the theoretical concepts while also providing hands-on training in various aspects of pharmacy practice. You will have opportunities to collaborate with faculty members, fellow students, and healthcare professionals, fostering an environment of teamwork and interdisciplinary learning.

Additionally, the B. Pharm program recognizes the importance of research and innovation in advancing the field of pharmacy. Students will be encouraged to engage in research projects, participate in seminars and conferences, and contribute to the scientific community. These experiences will foster a spirit of inquiry, critical analysis, and a commitment to evidence-based practice.

As one embark on this journey, it is essential to remain dedicated, motivated, and passionate about the field of pharmacy. The B. Pharm program will challenge one academically, intellectually, and professionally, but it will also provide one with a solid foundation for a successful career in pharmacy. Graduates of the program will be well-prepared to pursue various career paths, including community pharmacy, hospital pharmacy, pharmaceutical industry, research and development, regulatory affairs, and academia.

The B. Pharm program will not only shape one's knowledge and skills but also contribute to personal and professional growth. So let's join us on this transformative path towards becoming a competent and compassionate pharmacist.

#### **Objectives of the programme**

After the completion of the degree, students would

1. **Develop foundational knowledge:** The B. Pharm program aims to provide students with a solid understanding of pharmaceutical sciences, including areas such as medicinal chemistry, pharmacology, pharmaceutics, pharmacokinetics, pharmacognosy, pharmaceutical analysis, and clinical pharmacy. The program seeks to build a strong foundation of theoretical knowledge in these disciplines.



- 2. **Cultivate practical skills:** In addition to theoretical knowledge, the B. Pharm program emphasizes the development of practical skills relevant to pharmacy practice. Students engage in laboratory experiments, practical training, and clinical rotations to acquire hands-on experience in various aspects of pharmacy, such as compounding and dispensing medications, patient counselling, drug information retrieval, pharmaceutical analysis techniques, and medication management.
- 3. Foster critical thinking and problem-solving abilities: The program aims to cultivate critical thinking skills, enabling students to analyze complex pharmaceutical issues, evaluate scientific literature, and apply their knowledge to solve practical problems. Students are encouraged to develop a systematic approach to problem-solving and decision-making in pharmacy practice.
- 4. **Promote ethical and professional behaviour:** The B. Pharm program places significant emphasis on professional ethics and responsible pharmacy practice. Students are taught about the legal and ethical aspects of pharmacy, including patient confidentiality, proper medication dispensing, adherence to regulatory guidelines, and professional communication. The program aims to instil a sense of professionalism, integrity, and empathy in students.
- 5. Enhance communication and interpersonal skills: Effective communication is vital in the pharmacy profession. The B. Pharm program focuses on developing students' communication skills, enabling them to interact confidently and empathetically with patients, healthcare professionals, and colleagues. Students are trained in patient counselling, health education, medication information provision, and interprofessional collaboration.
- 6. Encourage research and innovation: Many B. Pharm programs promote research and innovation in the pharmaceutical field. Students may have opportunities to engage in research projects, collaborate with faculty members, and contribute to scientific advancements in pharmacy. This objective fosters a spirit of inquiry, critical analysis, and evidence-based practice.
- 7. **Prepare for diverse career opportunities:** The B. Pharm program aims to equip students with the knowledge and skills necessary for a wide range of career paths in pharmacy and related fields. Graduates should be prepared to work in various settings, including community pharmacies, hospital pharmacies, pharmaceutical industries, research and development organizations, regulatory affairs, and academia.

#### **Career Avenues**

Completing a B. Pharm programme opens up a career avenues in various departments of Pharmaceutical industries where you find your niche such as Quality Control, Microbiology, Research & Development (R&D), Manufacturing, production, Analytical Method Development Laboratory (ADL) etc. Below are some common career options for B. Pharm graduates:

- Drug Inspector
- Drug Analyst
- Researcher & Developer of Drugs / Cosmetics / Diagnostics and Vaccines
- Medical Writer
- Quality Controller
- Clinical Researcher

#### **Prospective Companies**



- Sun Pharmaceutical Industries Ltd.
- Intas Pharmaceuticals Ltd.
- Dr. Reddy's Laboratories
- Torrent Pharmaceuticals
- Novartis
- Glenmark Pharmaceuticals

#### Duration

4 Years (Full-Time)

### **Eligibility Criteria**

Candidates must have passed the 10+2 examination or equivalent in the Science stream and with a minimum of 50% aggregate marks.

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## **University Vision & Mission**

#### Vision

KR Mangalam University aspires to become an internationally recognized institution of higher learning through excellence in inter-disciplinary education, research and innovation, preparing socially responsible life-long learners contributing to nation building.

#### Mission

- Foster employability and entrepreneurship through futuristic curriculum and progressive pedagogy with cutting-edge technology.
- Instil notion of lifelong learning through stimulating research, Outcomes-based education and innovative thinking;
- Integrate global needs and expectations through collaborative programs with premier universities, research centers, industries and professional bodies;
- Enhance leadership qualities among the youth having understanding of ethical values and environmental realities;



## **School Vision & Mission**

#### Vision

To contribute towards healthcare needs of the society by producing a skilled, motivated, and accessible workforce dedicated towards achieving health for all.

#### **School Mission**

- To create an environment where teaching and learning are prioritised, with all support activities being held accountable for their success.
- To strengthen the institution's position as the school of choice for students across the State & Nation.
- To promote creative, immersive, and lifelong learning skills while addressing societal concerns.
- To promote co- and extra-curricular activities for over-all personality development of the students.
- To promote and undertake all-inclusive research and development activities.
- To instill in learners an entrepreneurial mindset and principles.
- Enhance industrial, institutional, national, and international partnerships for symbiotic relationships.



• To help students acquire and develop knowledge, skills and leadership qualities of the 21st Century and beyond.

### **About School**

The School of Medical and Allied Sciences at K. R. Mangalam University started in 2013 that offers a range of programs in the field of Medical and Allied Sciences that prepare students for various roles in healthcare, including medicine, nursing, pharmacy, medical laboratory sciences, and more. It is known for its quality education, top-notch infrastructure, cutting-edge labs, and comprehensive curriculum.

The School of Medical and Allied Sciences is committed to delivering high-quality education and training that meets industry standards and prepares students for the dynamic and evolving healthcare landscape. The faculty comprises experienced and knowledgeable professionals who are experts in their respective fields, ensuring that students receive the best possible education and mentorship.

The school provides state-of-the-art facilities, including well-equipped classrooms, laboratories, simulation centers, and clinical training sites. These resources enable students to gain hands-on experience, apply theoretical knowledge to practical situations, and develop the necessary skills to excel in their chosen healthcare professions.

In addition to academic programs, the School of Medical and Allied Sciences promotes research and innovation in the field of healthcare. Faculty members and students are encouraged to engage in research activities, collaborate with industry partners, and contribute to advancements in medical and allied health sciences. This research-driven approach helps in generating new knowledge, improving patient care, and addressing the challenges faced by the healthcare industry.

The school also recognizes the importance of inter-professional collaboration and teamwork in healthcare. Students from different programs have opportunities to work together on projects, engage in interdisciplinary learning activities, and gain a broader understanding of the healthcare system. This approach prepares graduates to effectively communicate, collaborate, and contribute to a patient-centered, team-based approach to healthcare delivery.

Furthermore, the School of Medical and Allied Sciences prioritizes community engagement and service. Students are encouraged to participate in outreach programs, health camps, and community service initiatives to make a positive impact on the health and well-being of local communities. These experiences not only provide valuable practical exposure but also foster a sense of social responsibility and empathy among students.



Overall, the School of Medical and Allied Sciences strives to produce competent, compassionate, and ethical professionals who are well prepared to meet the healthcare needs of individuals and communities. By offering comprehensive programs, fostering research and innovation, promoting inter-professional collaboration, and emphasizing community engagement, the school plays a crucial role in shaping the future of healthcare by producing highly skilled and dedicated professionals in the medical and allied health sciences.

#### **Programme Outcomes (POs)**

The entire curriculum of B. Pharmacy is planned to have following Programme outcomes

**PO 1 Pharmacy Knowledge**: Possess the core and basic knowledge associated with the profession of pharmacy.



**PO 2 Thinking Abilities**: Examine issues rationally and logically; shall acquire, evaluate, and synthesize information and knowledge relevant to an identified problem.

**PO3 Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills.

**PO 4 Leadership Skills**: Acquire knowledge of leadership traits and skills through curricular and co-curricular activities and develop skills and abilities that will enable him/her to lead or actively contribute to organizational improvement.

**PO 5 Professional Identity**: Understand, analyze and communicate the value of their professional roles in society.

**PO 6 Pharmacy and Society:** 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.

**PO 7 Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

**PO 8 Professional Ethics**: honor personal values, apply ethical principles in professional and social contexts, and take responsibility for the outcomes associated with the decisions.

**PO 9 Individual or teamwork:** Understand the need for leadership and team-building for fulfillment of practice, professional and societal responsibilities.

**PO 10 Communication:** Develop good communication skills so as to communicate effectively with the pharmacy community and with society at large.

**PO 11 Modern & Usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

**PO 12 Life-long Learning:** Recognize 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-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.



#### **Programme Educational Objectives (PEOs)**

**PEO1:** To produce pharmacy graduates with profound knowledge and high technical skills to meet various aspects in wide areas of Pharmaceutical industry.

**PEO2:** To enable pharmacy graduates to gain theoretical and practical knowledge in various subjects to discover novel formulation for the benefits of the society.

**PEO3:** To prepare entrepreneurs in Pharma sector with effective communication skills, teamwork and ethical attitude with high integrity for the betterment of the community and the society.

**PEO4:** To promote and train the pharmacy graduates towards contribution of health care system and patient counselling for prevention and treatment of diseases.

**PEO5:** To encourage the pharmacy graduates for lifelong learning and highly competent career prospect related to interdisciplinary pharmaceutical sciences.

#### **Programme Specific Outcomes (PSOs)**

After completion of the program, students are able:

**PSO1.** To impart theoretical & Practical knowledge among students in the various fields of pharmaceutical sciences viz., Pharmaceutics, Pharmaceutical Chemistry, Pharmacology, Pharmacognosy, Biotechnology, Pharmaceutical jurisprudence and Pharmaceutical marketing etc.

**PSO2.** To develop the skill acquired in various regulatory aspects related to clinical, preclinical and medical devices used for human use. The students will be able to experience hand on manufacturing, packaging of drugs. After completing this course students will be able to work as a skilled pharmacist in manufacturing of drugs and cosmetics.

### **Programme Highlights**

- Strong foundation in pharmaceutical sciences.
- Practical training and experiential learning.
- Emphasis on patient-centered care.
- Interdisciplinary collaboration.
- Research opportunities
- Industry exposure and internships
- Professional development and ethics
- Preparation for licensure and career opportunities



	Semester-I				
Course code	Course Title	L	Т	Р	С
BP101T	Human Anatomy and Physiology I– Theory	3	1		4
BP102T	Pharmaceutical Analysis I – Theory	3	1		4
BP103T	Pharmaceutics I – Theory	3	1		4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1		4
BP105T	Communication skills – Theory *	2	0		2
BP106RBT/ BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	0		2
BP107P	Human Anatomy and Physiology – Practical		0	4	2
BP108P	Pharmaceutical Analysis I – Practical		0	4	2
BP109P	Pharmaceutics I – Practical		0	4	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical		0	4	2
BP111P	Communication skills – Practical*		0	2	1
BP112RBP	Remedial Biology – Practical*		0	2	1
	Total	16	4	20	30

## **Program Scheme**

Semester-II										
Course code	Course Title	L	Т	Р	С					
BP201T	Human Anatomy and Physiology II – Theory	3	1		4					
BP202T	Pharmaceutical Organic Chemistry I – Theory	3	1		4					
BP203T	Biochemistry – Theory	3	1		4					
BP204T	Pathophysiology – Theory	3	1		4					
BP205T	Computer Applications in Pharmacy – Theory *	3	0		3					
BP206T	Environmental sciences – Theory *	3	0		3					
BP207P	Human Anatomy and Physiology II – Practical		0	4	2					
BP208P	Pharmaceutical Organic Chemistry I- Practical		0	4	2					
BP209P	Biochemistry – Practical		0	4	2					
BP210P	Computer Applications in Pharmacy – Practical*		0	2	1					
	Total									



	Semester-III										
Course code	Course code Course Title										
BP301T	Pharmaceutical Organic Chemistry II – Theory	3	1		4						
BP302T	Physical Pharmaceutics I – Theory	3	1		4						
BP303T	Pharmaceutical Microbiology – Theory	3	1		4						
BP304T	Pharmaceutical Engineering – Theory	3	1		4						
BP305P	Pharmaceutical Organic Chemistry II – Practical		0	4	2						
BP306P	Physical Pharmaceutics I – Practical		0	4	2						
BP307P	Pharmaceutical Microbiology – Practical		0	4	2						
BP 308P	Pharmaceutical Engineering –Practical		0	4	2						
	Total										

Semester-IV										
Course code	Course Title	L	Т	Р	С					
BP401T	Pharmaceutical Organic Chemistry III- Theory	3	1		4					
BP402T	Medicinal Chemistry I – Theory	3	1		4					
BP403T	Physical Pharmaceutics II – Theory	3	1		4					
BP404T	Pharmacology I – Theory	3	1		4					
BP405T	Pharmacognosy and Phytochemistry I- Theory	3	1		4					
BP406P	Medicinal Chemistry I – Practical		0	4	2					
BP407P	Physical Pharmaceutics II – Practical		0	4	2					
BP408P	Pharmacology I – Practical		0	4	2					
BP409P	Pharmacognosy and Phytochemistry I – Practical		0	4	2					
	Total									



Semester-V										
Course code	Course code Course Title									
BP501T	Medicinal Chemistry II – Theory	3	1		4					
BP502T	Industrial PharmacyI– Theory	3	1		4					
BP503T	Pharmacology II – Theory	3	1		4					
BP504T	Pharmacognosy and Phytochemistry II- Theory	3	1		4					
BP505T	Pharmaceutical Jurisprudence – Theory	3	1		4					
BP506P	Industrial PharmacyI – Practical		0	4	2					
BP507P	Pharmacology II – Practical		0	4	2					
BP508P	Pharmacognosy and Phytochemistry II – Practical		0	4	2					
	Total	15	5	12	26					

Semester-VI									
Course code	Course Title	L	Т	Р	С				
BP601T	Medicinal Chemistry III – Theory	3	1		4				
BP602T	Pharmacology III – Theory	3	1		4				
BP603T	Herbal Drug Technology – Theory	3	1		4				
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	3	1		4				
BP605T	Pharmaceutical Biotechnology – Theory	3	1		4				
BP606T	Quality Assurance – Theory	3	1		4				
BP607P	Medicinal chemistry III – Practical		0	4	2				
BP608P	Pharmacology III – Practical		0	4	2				
BP609P	Herbal Drug Technology – Practical		0	4	2				
	18	5	12	30					

Semester-VII										
Course code	L	Т	Р	С						
BP701T	Instrumental Methods of Analysis – Theory	3	1		4					
BP702T	Industrial PharmacyII – Theory	3	1		4					
BP703T	Pharmacy Practice – Theory	3	1		4					
BP704T	Novel Drug Delivery System – Theory	3	1		4					
BP705P	Instrumental Methods of Analysis - Practical	4	0		2					



BP706PS	Practice School		0	12	6
	Total	16	4	12	24

	Semester-VIII				
Course code	Course Title	L	Т	Р	С
BP801T	Biostatistics and Research Methodology	3	1		4
BP802T	Social and Preventive Pharmacy	3	1		4
BP803ET	Pharma Marketing Management				
BP804ET	Pharmaceutical Regulatory Science				
BP805ET	Pharmacovigilance				
BP806ET           BP807ET           BP808ET           BP809ET           BP810ET           BP811ET           BP812ET	Quality Control and Standardization of HerbalsComputer Aided Drug DesignCell and Molecular BiologyCosmetic ScienceExperimental PharmacologyAdvanced Instrumentation TechniquesDietary Supplements and Nutraceuticals	3 + 3 = 6	1 + 1 = 2		4 + 4 = 8
BP813PW	Project Work		_	12	6
	Total	12	4	12	22



## **CO-PO/PSO** Mapping

Semester-I

BP 101T	Human Anatomy And Physiology-I	L	Т	С							
cVersion 2.0		3	1	4							
Total Contact Hours	45 Hrs										
Pre-requisites/Exposure	Pharmacology										
Co-requisites Pharmacology											
	Course Objectives										
Upon completion of this course the	e student should be able to:										
	logy, structure and functions of various organs of the hu	man hody									
	eostatic mechanisms and their imbalances	inali oody									
	s and organs of different systems of human body										
•	iments related to special senses and nervous system										
-	orking pattern of different organs of each system										
	Course Outcomes (CO	)									
CO1. This subject is designed to in	mpart fundamental knowledge on the structure and func	ions of the vario	ous systems of the	human body.							
CO2. It also helps in understandin	g both homeostatic mechanisms										
-	-										
CO3. The subject provides the bas	ic knowledge required to understand the various discipl	nes of pharmacy	у.								
CO4. It enlightens the students abo	out the cells, various types of tissues in human body, ske	eleton system, sk	celetal and smooth	muscles.							
-		•									



CO5. It also deals with the composition of blood, blood groups, blood coagulation, various disease-causing agents and preventive measures, balanced diet, disorders and treatment involve in nutritional deficiency.

	Programme and Course Mapping																
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PS 0 5
CO1	3	1	-	-	2	3	1	-	1	-	2	3	3	3	-	-	-
CO2	3	2	-	-	2	3	-	1	1	-	2	2	2	3	-	-	-
CO3	3	1	-	-	3	3	-	2	1	-	2	-	3	3	-	-	-
CO4	3	1	-	-	3	3	-	2	1	-	2	-	3	3	-	-	-
CO5	3	-	-	-	3	3	-	2	-	-	2	-	2	2	-	-	-
1=lightly mapped     2= moderately mapped     3=strongly mapped									1								

BP102T	Pharmaceutical Analysis (Theory)	L	Т	Р	С
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs			1	1
Pre-requisites/Exposure	Pharmaceutical Analytical Chemistry				
Co-requisites	Analytical Chemistry				
	Course Objectives				



The course will enable the student-teacher to:

- 1. To Know the history of Pharmacopoeia
- 2. Understand the principles of volumetric and electro chemical analysis
- 3. Carryout various volumetric and electrochemical titrations
- 4. Develop analytical skills
- 5. To understand with acid base titration.

#### **Course Outcomes (CO)**

CO1. This subject is designed to impart fundamental knowledge on pharmaceutical preparations.

CO2. The subject provides the basic knowledge required to understand the various disciplines of Analysis.

CO3. This subject deals with the monographs of inorganic drugs and pharmaceuticals.

CO4. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopeia and other Regulatory agencies.

CO5. Carryout various volumetric and electrochemical titrations.

							Progra	amme a	nd Cours	se Mappir	ng						
со	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	1	-	-	2	3	1	-	1	-	2	3	3	-	-	-	-
CO2	3	2	-	-	2	3	-	1	1	-	2	2	2	-	-	-	-
CO3	3	1	-	-	3	3	-	2	1	-	2	-	3	-	-	-	-
<b>CO4</b>	3	1	-	-	3	3	-	2	1	-	2	-	3	-	-	-	-
CO5	3	-	-	-	3	3	-	1	-	-	3	-	2	-	-	-	-
		I	1	1=lig	htly map	oped	2= n	noderate	ly mappe	d	3=strong	gly mappe	d	1	1	1	1



BP103T	Pharmaceutics-I (Theory)	L	Т	Р	С									
Version 2.0		3	1	0	4									
Total Contact Hours	45 Hrs				I									
Pre-requisites/Exposure	Pharmaceutics													
Co-requisites	Posology													
	Course	Objectives												
he course will enable the student-teacher to: 1. Know the history of profession of pharmacy														
1. Know the history of pr	ofession of pharmacy													
2. Understand the basics	of different dosage forms, pharmaceutical in	compatibilit	ies and pharma	ceutical calculations										
3. Understand the profess	ional way of handling the prescription													
4. Preparation of various	conventional dosage													
5. Introduction about nov	el drug delivery system													
	Course O	utcomes (C	0)											
CO1. This subject is designed t	o impart fundamental knowledge on pharma	aceutical pre	parations.											
CO2. The subject provides the	basic knowledge required to understand the	various disc	iplines of phar	macy.										
CO3. It enlightens the students	about the dosage, various types of dosage for	orm, NDDS,	depot preparat	tion.										
CO4. Provide Knowledge abou	t Indian Pharmacopoeia, British Pharmacop	eia and othe	r Regulatory ag	gencies										
CO5. Provide Knowledge abou	t metric system and calculation of dosages.													



								Р	rogran	nme a	nd Cou	rse Map	ping				
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	2	1	-	-	2	3	1	2	1	-	2	3	3	-	-	-	-
CO2	3	2	-	-	2	3	-	1	1	-	2	3	2	-	-	-	-
CO3	3	1	-	-	3	3	-	2	1	-	2	3	3	-	-	-	-
CO4	3	1	-	-	3	3	-	2	1	-	2	3	3	-	-	-	-
CO5	3	-	-	-	3	3	-	1	-	-	3	3	2	-	-	-	-
	1		1	1	1=lig	htly ma	apped	1	2= mo	derate	ely mapp	ed	3=stro	ongly mappe	d	1	1

BP104T	Pharmaceutical Inorganic Chemistry (Theory)	L	Т	Р	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs		1	1	
Pre-requisites/Exposure	Pharmaceutical Chemistry				
Co-requisites	Chemistry				
	Course Objectives				

The course will enable the student-teacher to:

- 1. To Know the history of Pharmacopoeia
- 2. To know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.



- 3. Understand the medicinal and pharmaceutical importance of inorganic compounds
- 4. Preparation of various radiopharmaceutical dosage
- 5. Introduction about Antidotes

**Course Outcomes (CO)** 

CO1. This subject is designed to impart fundamental knowledge on pharmaceutical preparations.

CO2. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

CO3. This subject deals with the monographs of inorganic drugs and pharmaceuticals.

CO4. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopeia and other Regulatory agencies.

CO5. Provide Knowledge about metric system and calculation of dosages to understand.

								Program	nme and Co	ourse Map	oping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	1	-	-	3	2	-	2	1	-	2	3	3	-	-	-	-
CO2	3	2	-	-	2	3	-	1	1	-	2	3	3	-	-	-	-
CO3	3	1	-	-	3	3	-	2	1	-	2	3	3	-	-	-	-
CO4	3	1	-	-	3	3	-	2	1	-	2	3	3	-	-	-	-
CO5	3	-	-	-	3	3	-	1	-	-	3	3	3	-	-	-	-
	1	1	1	1	1=lig	htly mapp	bed	2= mo	derately ma	apped	3=stro	ongly mapp	bed	1	1	1	L



BP-1(	)5T				C	ommu	nicatio	n Skills	(Theor	ry)	L		Т		Р		С
Versi	on 2.0										2		0		0		2
Total	Conta	ct Hou	rs		30 Hr	S								<u> </u>			
Pre-r	equisit	es/Exp	osure		Comm	nunicat	ion Ski	lls									
Co-re	quisite	S			Comm	nunicat	ion Ski	lls									
									Cou	ırse Obj	ectives						
The co	ourse w	ill enal	ole the s	student-	-teache	r to:											
1. Cor	nmunic	ate eff	ectively	v (Verba	al and I	Non-Ve	rbal)										
2. Eff	ectively	v manaş	ge the te	eam as	a team	player											
									Cours	e Outco	mes (CC	))					
CO1.	Unders	tand th	e behav	vioural 1	needs f	or a pha	armacis	t to fun	ction ef	fectively	in the a	reas of p	harmaceutica	l operation			
CO2.	Develo	p interv	view sk	ills													
CO3.	Develo	p Lead	ership c	qualities	s and es	ssential	S										
CO4.	Develo	- p confi	dence i	n pursu	ing inte	erdiscip	linary										
								D	nognom	me and	Course	Monnin	a				
	[		[		r		r	L .	i ogi am		Course	маррш	g	1		200	
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	1	3	2	1	3	1	1	3	3	1	2	-	-	-	-	-
CO2	3	1	2	2	1	3	1	1	2	3	1	2	-	-	-	-	-



CO3	1	1	2	2	1	3	1	1	2	3	1	2	-	-	-	-	-
CO4	1	1	1	2	1	3	1	1	1	3	1	2	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1=lightly mapped								2= mo	derately	mapped		3=strongly	mapped			

BP106 RBT	REMEDIAL BIOLOGY (Theory)	L	Т	Р	С
Version 2.0		2	0	0	2
Total Contact Hours	30 Hrs				
Pre-requisites/Exposure	Biology				
Co-requisites	Biology				
	Course Objec	ctives			
The course will enable the studen	t-teacher to:				
1. know the classification a	nd salient features of five kingdoms of life				
2. understand the basic cor	nponents of anatomy & physiology of plant				
3. know understand the bas	ic components of anatomy & physiology anim	mal with sp	pecial reference	to human	
	Course Outcom	es (CO)			
	1			1 1 1 0	

CO1. To learn and understand the components of living world, structure and functional system of plant kingdom (leaf, root, stem).

CO2. To learn and understand the components Composition of blood, blood groups, coagulation of blood.

CO3. It provides knowledge about structure and function of heart.

CO4. It provides knowledge about Digestive system, Reproductive system.



CO5. It helps in understanding the concept of Respiration system.

								Prog	gramm	e and Co	urse Ma	apping						
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	-	-	3	2	-	-	-	-	2	3	3	3	-	-	-	-
CO2	3	2	-	-	2	3	-	-	-	-	2	3	3	3	-	-	-	-
CO3	3	2	-	-	3	3	-	-	-	-	2	3	3	3	-	-	-	-
CO4	3	2	-	-	3	3	-	-	-	-	2	3	3	3	-	-	-	-
CO5	3	2	-	-	3	3	-	-	-	-	3	3	3	3	-	-	-	-
		1		1	=lightly	y mapp	ed	2=	= moder	ately mag	pped	3:	=strongly	mapped	1	1	1	1

BP106 RMT	Remedial Mathematics (Theory)	L	Т	Р	С
Version 2.0		2	0	0	2
Total Contact Hours	30 Hrs				
Pre-requisites/Exposure	Biology				
Co-requisites	Biology				
	Course Obje	ectives			

The course will enable the student-teacher to:

- 1. Know the theory and their application in Pharmacy
- 2. Solve the different types of problems by applying



3. Appreciate the important application of mathematics in Pharmacy

									Cours	e Outcome	es (CO)							
СО	1. To le	earn and	d under	stand th	ne adva	nce ma	themati	cs and i	ts imple	ementation	in pharma	ncy						
CO	2. It pro	ovides l	cnowled	dge of f	raction	and its	impler	nentatio	on in ph	armacy								
CO	3. It pro	ovides l	knowled	dge of a	analytic	al geon	netry ar	nd calcu	lus									
CO	4. It he	lps in u	ndersta	nding t	he matr	rices an	d deteri	minant										
								P	rogran	me and Co	ourse Ma	pping						
CO	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO2	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO3	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO4	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		<u> </u>	1	<u> </u>	1=lig	ghtly m	apped	1	2= mo	derately ma	pped	3=	strongly	mapped	<u> </u>		<u> </u>	<u> </u>

BP107P	Human Anatomy and Physiology (HAP) – Practical	L	Т	Р	С
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	HAP-1 Practical				



Co-re	quisites	5			Experi	mental P	harmaco	logy										
								0	Course (	bjective	es							
The co	ourse w	ill enab	le the st	udent-te	eacher to	:												
	1. P	ractical	physiol	ogy is c	omplime	entary to	the theo	retical d	iscussio	ns in Phy	siology.							
			allows uman b		fication	of physic	ological j	processe	s discuss	ed in the	ory class	es throug	h experi	ments or	n living ti	ssue, inta	ct animal	s or
	3. T	his is h	elpful fo	or devel	oping an	insight	into hum	an anato	my and	physiolo	gy.							
								Cou	irse Out	comes (	C <b>O</b> )							
CO1.	To learn	n and ur	nderstan	d the co	mponen	ts of livi	ng world	, structu	re and fu	inctional	system o	f plant ki	ngdom.					
CO2.	It provid	des kno	wledge	about b	lood, the	ir compo	osition, f	unction a	and coag	ulation f	actor.							
CO3.	To learr	1 the ab	out bone	es with	special r	eference	to huma	n.										
					•													
CO4.	Provide	practic	al know	leage of	I b1010g1	cal syste	m and h	uman an	atomy									
								Progra	amme a	nd Cour	se Mappi	ing						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-
	3	3	3	2	2	2	-	1	2	2	3	3	3	3	-	-	-	-
CO2							1	1	1	1					1			
CO2 CO3	3	3	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-



CO5	3	3	2	2	3	2	-	1	2	2	3	3	3	3	-	-	-	-
						tly mapp	ed	2= n	noderate	ly mappe	d	3=stro	ongly ma	apped				

BP 108P	PHARMACEUTICAL ANALYSIS	L	Т	P	С									
	(Practical)													
Version 2.0		0	0	4	2									
Total Contact Hours	60 Hrs													
Pre-requisites/Exposure	Pharmaceutical Analysis													
Co-requisites Pharmaceutical chemistry														
Course Objectives														
The course will enable the studen	The course will enable the student-teacher to:													
1. To Know the history of P	harmacopoeia													
2. Understand the principles	of volumetric and electro chemical analysis													
3. Carryout various volume	tric and electrochemical titrations													
4. Develop analytical skills														
	Course Outo	comes (CO	))											
CO1. This subject is designed to i	mpart fundamental knowledge on pharmaceu	tical prepar	rations.											
CO2. The subject provides the ba	sic knowledge required to understand the varie	ous discipl	ines of Analy	sis.										
CO3. This subject deals with the	monographs of inorganic drugs and pharmace	uticals.												
CO4. Provide Knowledge about I	ndian Pharmacopoeia, British Pharmacopeia a	and other R	egulatory age	encies.										



CO5. Provide Knowledge about metric system and calculation of dosages.

								1	rogran	inte an	d Cours	e Mappi	ing					
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
C <b>O</b> 1	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
C <b>O</b> 2	3	3	3	2	2	2	-	1	2	2	3	3	3	-	-	-	-	-
CO3	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO4	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO5	3	3	2	2	3	2	-	1	2	2	3	3	3	-	-	-	-	-
					1=li	ghtly m	apped	1	2= mo	deratel	y mapped	d	3=sti	rongly n	napped	1		

BP 109P	Pharmaceutics-I (Practical)	L	Т	Р	С								
Version 2.0		0	0	4	2								
Total Contact Hours	60 Hrs												
Pre-requisites/Exposure	Pharmaceutics												
Co-requisites	Co-requisites     Pharmaceutics												
Course Objectives													
The course will enable the stud	The course will enable the student-teacher to:												

• Know the history of profession of pharmacy



- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage

#### **Course Outcomes (CO)**

CO1. This subject is designed to impart fundamental knowledge on pharmaceutical preparations.

CO2. The subject provides the basic knowledge required to understand the various disciplines of Pharmacy.

CO3. It enlightens the students about the dosage, various types of dosage form, NDDS, depot preparation.

CO4. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopeia and other Regulatory Agencies.

CO5. Provide Knowledge about metric system and calculation of dosages.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO2	3	2	3	2	2	2	-	1	2	2	3	3	3	-	-	-	-	-
CO3	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO4	3	2	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO5	3	3	2	2	3	2	-	1	2	2	3	3	3	-	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongl										y mappe	d	1						



BP 110P	Pharmaceutical Inorganic Chemistry	L	Т	Р	С
	(Practical)				
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs			I I	
Pre-requisites/Exposure	Inorganic chemistry				
Co-requisites	Pharmaceutical chemistry				
	Course Objectiv	es			
The course will enable the stud	ent-teacher to:				
1. To Know the history of	f Pharmacopoeia				
2. To know the sources of	f impurities and methods to determine the impurities in j	pharmaceutic	als		
3. Understand the medicin	nal and pharmaceutical importance of inorganic compound	inds			
4. Preparation of differen	t category of pharmaceutical inorganic compounds				
5. Analysis of pharmaceu	tical compounds				
	Course Outcomes (	CO)			
CO1. This subject is designed t	to impart fundamental knowledge on pharmaceutical pre-	eparations.			
CO2 Dravida Vravilada atom			A		
CO2. Provide Knowledge abou	tt Indian Pharmacopoeia, British Pharmacopeia and othe	er Kegulatory	Agencies.		
CO4. Provide practical learnin	g of impurity test in pharmaceuticals				
CO5. Provide Knowledge of ca	alculation involved pharmaceutical chemistry subject				



								Prog	ramme a	nd Course	e Mappi	ng						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO2	3	2	3	2	2	2	-	1	2	2	3	3	3	-	-	-	-	-
CO3	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO4	3	2	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO5	3	3	2	2	3	2	-	1	2	2	3	3	3	-	-	-	-	-
	1=lightly mapped 2= moderately mapped									1	3=stro	ngly map	oped	1	I	1	1	

BP111P	Communication skills – Practical	L	Т	Р	С							
Version 2.0		0	0	2	1							
Total Contact Hours	30 Hrs											
Pre-requisites/Exposure     Communication Skills												
Co-requisites     Communication Skills												
Course Objectives												
The course will enable the student-teacher to:												

1. Communicate effectively (Verbal and Non-Verbal)

2. Effectively manage the team as a team player



Course Outcomes (CO) CO1. Understand the behavioural needs for a pharmacist to function effectively in the areas of pharmaceutical operation

CO2. Develop interview skills

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO2	3	2	3	2	2	2	-	1	2	2	3	3	3	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1=lightly mapped     2= moderately mapped     3=strongly mapped																	

BP 112RBP	Remedial Biology (Practical)	L	Т	Р	С								
Version 2.0		0	0	2	1								
Total Contact Hours	30 Hrs				<u> </u>								
Pre-requisites/Exposure	Remedial Biology												
Co-requisites     Biology													
Course Objectives													



The course will enable the student-teacher to:

- 1. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
- 2. To knowledge of blood, their function and study of bones with special reference to human
- 3. Understand the basic components of anatomy & physiology of plant
- 4. Know understand the basic components of anatomy & physiology animal with special reference to human.

<b>Course Outcomes</b>	(CO)
------------------------	------

CO1. To learn and understand the components of living world, structure and functional system of plant kingdom.

CO2. It provides knowledge about blood, their composition, function and coagulation factor.

CO3. To learn the about bones with special reference to human.

CO4. Provide practical knowledge of biological system and human anatomy

									Progra	mme ar	d Cours	e Mappin	g					
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
C01	3	3	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-
CO2	3	2	3	2	2	2	-	1	2	2	3	3	3	3	-	-	-	-
CO3	3	3	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-
CO4	3	2	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-
CO5	3	3	2	2	3	2	-	1	2	2	3	3	3	3	-	-	-	-
1=lightly mapped 2= moderately mapped												3=strongly mapped						



# **Semester-II**

BP201T	Human Anatomy and Physiology-II (Theory)	L	Т	Р	C											
Version 2.0		1	0	4												
<b>Total Contact Hours</b>	urs 45 Hours															
Pre- requisites/Exposure	Human Anatomy & Physiology-I															
Co-requisites Pathophysiology and Biology																
Course Objectives																
The course will enable the student-teacher to:																
<ol> <li>Explain the gross morphology, structure and functions of various organs of the human body.</li> <li>Describe the various homeostatic mechanisms and their imbalances.</li> </ol>																
3. Identify the various tis	ssues and organs of different systems of huma	an body.														
4. Perform the hematolo	gical tests like blood cell counts, hemoglobin	estimation, bleeding/clo	tting time etc and also record blood p	pressur	e,											
heart rate, pulse and resp	piratory volume.															
5. Appreciate coordinate	d working pattern of different organs of each	system.														
6. Appreciate the interlin	ked mechanisms in the maintenance of norm	al functioning (homeosta	asis) of human body.													
	Course O	utcomes (CO)			Course Outcomes (CO)											



On completion of this course, the student-teacher will be able to:

CO1. Understand fundamental knowledge related to the structure of brain and its functions in the human body.

CO2. Explain basic knowledge related to digestive system.

CO3. Explain basic knowledge required to understand the respiratory system.

CO4. Explain basic knowledge required to understand the reproductive system.

CO5. Explain the basic knowledge required to understand the hormonal system.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	-	2	2		2		3	2	3	2	-	-	-	-	-
CO2	3	1	-	-	2	2		2		2	2	3	2	-	-	-	-	-
CO3	3	1	-	-	1	2		2		2	2	3	2	-	-	-	-	-
CO4	3	1	-	-	2	2		2		2	2	3	2	-	-	-	-	-
CO5	3	1	-	-	2	2		2		2	2	3	2	-	-	-	-	-
				1	=light	ly map	ped		2= mo	derate	ly mapp	ed	3=	strongl	y mapped	1	•	



BP202T	Pharmacer (Theory)	utical Organi	c Chemistry -	–I	L	r	ſ	P	)		С				
Version 2.0		3 1 0 4													
<b>Total Contact Hours</b>															
Pre- requisites/Exposure	Organic ch	Organic chemistry													
Co-requisites															
Course Objectives															
The course will enable the student-teacher to:															
1. Write the structure, name and the type of isomerism of the organic compound															
2. Write the reaction, name the reaction and orientation of reactions															
3. Account for reactivity/stability of compounds,															
4. Identify/confirm the	4. Identify/confirm the identification of organic compound														
			Cours	se Outcon	nes (CO)										
CO1. Explain fundame	CO1. Explain fundamental knowledge on isomerism.														
CO2. Explain fundame	ntal knowledge	e of alkanes ar	nd alkenes and	l their stab	ility.										
CO3. Explain the Strue	ture, reactions	and function of	of alkyl halide	es.											
-	CO3. Explain the Structure, reactions and function of alkyl halides. CO4. Explain the nucleophilic addition reactions.														
-	CO4. Explain the nucleophilic addition feactions. CO5. Explain the structure, reaction and effect of various groups acid derivatives														
			Program	nme and (	Course M	lapping									
CO PO1 PO2 PO	03 PO4 PO5	PO6 PO7	PO8 PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6			



CO1	3	1	-	-	2	2	2		3	2	3	2	2	-	-	-	-
CO2	3	1	-	-	2	2	2		2	2	3	2	2	-	-	-	-
CO3	3	1	-	-	1	2	2		2	2	3	2	2	-	-	-	-
CO4	3	1	-	-	2	2	2		2	2	3	2	2	-	-	-	-
CO5	3	1	-	-	2	2	2		2	2	3	2	2	-	-	-	-
1=lightly mapped							2= m	oderately m	apped	3=s	trongly ma	pped	•	•	•	•	



<b>BP20</b>	3T			Bioch	emist	ry (Th	eory)				L	]	ſ		Р		С	
Versi	on 2.0										3	1	-		0		4	
Total	Conta	ct Ho	urs	45 Ho	ours													
Pre- requi	sites/E	xposu	re	Chem	istry													
Co-re	equisite	es		Chem	istry a	nd bio	logy											
									Co	urse Obj	ectives							
The c	ourse w	vill ena	able th	e stude	nt-teac	her to:												
1. Un enzyn		d the o	catalyt	ic role	of enzy	ymes, i	importa	ance of e	enzyn	ne inhibit	ors in desig	gn of new d	rugs, there	apeutic	and dia	gnostic	applicat	ions of
2. Un	derstan	d the r	netabo	olism o	f nutrie	ent mol	lecules	in physi	iologi	ical and p	athological	l conditions	•					
3. Un	nderstar	nd the	geneti	c organ	izatior	n of ma	ımmali	an geno	me ar	nd functio	ns of DNA	in the synt	hesis of R	NAs ar	nd protei	ns.		
								(	Cour	se Outco	mes (CO)							
	1			,				ill be abl e structu		nction an	d significa	nce of bion	nolecules.					
CO2.	Explai	n vario	ous me	tabolic	pathw	ays ba	sed on	glucose	•									
CO3.	Explai	n lipid	s oxida	ation, c	ataboli	ism, an	abolisi	m and re	lated	diseases.								
CO4.	Explai	n bios <u>y</u>	ynthesi	is and o	catabol	ism of	purine	and pyr	imidi	ine nucleo	otides.							
CO5.	Explain	n enzy	me kir	netics a	nd its	various	s applic	cations.										
								Pro	ogran	nme and	Course M	apping						
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	209	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	-	2	2		2		3	2	3	2	2	-	-	-	-



CO2	3	1	-	-	2	2		2		2	2	3	2	2	-	-	-	-
CO3	3	1	-	-	1	2		2		2	2	3	2	2	-	-	-	-
CO4	3	1	-	-	2	2		2		2	2	3	2	2	-	-	-	-
CO5	3	1	-	-	2	2		2		2	2	3	2	2	-	-	-	-
	1=lightly mapped									oderately	mapped	3=stro	ongly mappe	ed			•	•



<b>BP20</b>	4T			Path	ophysi	ology	(Theor	y)			L	]	Г		Р		С	
Versi	on 2.0										3	1	-		0		4	
Total	Conta	ict Ho	urs	45 He	ours													
Pre- requi	sites/E	xposu	re	Cellu	lar and	molec	ular Bi	iology										
Co-re	quisit	es		Chem	nistry a	nd bio	logy											
									Co	ourse Obj	ectives							
The co	ourse v	vill en	able th	e stude	nt-teac	cher to:												
1. 2. 3. 4.	Unde Knov	erstand w the c	ling of	ves org	s types	of inju	uries er	ncounte		seases. uring life.								
									Cour	se Outco	mes (CO)							
CO2. CO3. CO4.	Under Under Under	stand t stand t stand t	he Pat he Pat he Pat	hophys hophys	iology iology iology	of hea of disc of Dis	rt disea ease rel ease re	ase and lated to elated t	l their o respin o gastr	complicat ratory and	endocrine	system. er's and car	ncer diseas	se.				
								Р	rograi	mme and	Course M	apping						
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	-	2	2		2		3	2	3	2		-	-	-	-
CO2	3	1	-	-	2	2		2		2	2	3	2		-	-	-	-



CO3	3	1	-	-	1	2		2		2	2	3	2		-	-	-	-
CO4	3	1	-	-	2	2		2		2	2	3	2		-	-	-	-
CO5	3	1	-	-	2	2		2		2	2	3	2		-	-	-	-
					1=li	ghtly n	napped		2= m	oderately	mapped	3=stro	ngly mapp	ed				

BP205T	Computer Applications in Pharmacy (Theory)	L	Т	Р	С
Version 2.0		3	0	0	3
<b>Total Contact Hours</b>	25 Hours				
Pre-requisites/Exposure	Computer sciences				
Co-requisites	Computer sciences				
	Course	Objectives			
The course will enable the	student-teacher to:				
	plications of databases in pharmacy.	utcomes (CO)			
CO1. Learn about the basic	es of computer application in pharmacy.				
CO2. Understand various t	ypes of databases.				
CO3. Understand the appli	cations of different types of databases in pharma	acy.			
CO4. Explain the role of co	omputers for data analysis in Preclinical develop	oment.			
	Programme	and Course Maj	pping		



СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO 5	PSO6
C01	1	2	2	-	2	2	-	-	-	3	2	3	2	-	-	-	-	-
CO2	1	1	2	-	2	2	-	-	-	2	2	3	2	-	-	-	-	-
CO3	1	1	2	-	1	2	-	-	-	2	2	3	2	-	-	-	-	-
CO4	1	2	2	-	2	2	-	-	-	2	2	3	2	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					1=lig	ghtly m	apped		2= m	oderatel	y mapped	1	3=strongly	mapped			•	



BP2067	Г	En	vironmen	tal Science	es (Theory)		L	Г	1	J	P		С	
Version	n 2.0						3	0		(	0		3	
Total C	Contact Ho	<b>urs</b> 30	Hours											
Pre- requisit	tes/Exposu		vironment	studies										
Co-requ	uisites	Soc	ial and cu	iltural facto	rs									
						Course	Objective	s						
The cou	urse will en	able the stu	dent-teacl	her to:										
1. Creat	te the aware	eness about	environm	nental probl	ems among l	earners.								
2. Impar	rt basic kno	wledge ab	out the en	vironment a	and its allied	problems.								
3. Deve	lop an attit	ude of conc	ern for th	e environm	ent.									
4. Motiv	vate learnei	to particip	ate in env	ironment pi	rotection and	environme	ent improv	ement.						
5. Acqu	uire skills to	help the co	oncerned i	individuals	in identifyin	g and solvi	ng environ	mental						
						Course O	utcomes ((	C <b>O</b> )						
							· · ·							
CO1. To	o study of t	he environ	nental sys	stem and the	e status of its	inherent o	or induced	changes on	organisms					
CO 2. S	Strive to atta	ain harmon	y with Na	ture										
CO3. M	Iotivate lear	rner to part	cipate in	environmer	nt protection	and enviro	nment imp	rovement.						
CO 4. T	Го Impart b	asic knowle	dge abou	t the enviro	nment and it	s allied pro	blems							
					Р	rogramme	and Cours	e Mapping						
CO P	PO1 PO2	PO3 PO	4 PO5	PO6 PO7	PO8 PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO 4	PSO5	PSO6



CO1													-	-	-	-
CO2													-	-	-	-
CO3													-	-	-	-
<b>CO4</b>													-	-	-	-
			1=1	lightly	mappe	d	2=	= moderat	ely mappe	d	3=strongly	y mapped				

BP207P	Human Anatomy And Physiology-I (Practical)	L	Т	Р	С
Version 2.0		0	0	<mark>4</mark>	2
<b>Total Contact Hours</b>	60 Hours				
Pre-	Pharmacology				
requisites/Exposure					
Co-requisites	Pathophysiology				
	0				

#### **Course Objectives**

The course will enable the student-teacher to:

- 1. Practical physiology is complimentary to the theoretical discussions in Physiology.
- 2. Practical allow the verification of physiological processes discusses in theory classes through experiments on living tissue, intact animals or normal human beings.
- 3. This is helpful for developing an insight on the human anatomy and physiology subject.

#### Course Outcomes (CO)

On completion of this course, the student-teacher will be able to:

CO1. This subject is designed to impart practical knowledge on the in theory classes through experiments on living tissue, intact animals or normal human beings.

CO2. The subject provides the basic knowledge required to understand the digestive system



CO3. The subject provides the basic knowledge required to understand the nervous system.

CO4. The subject provides the basic knowledge required to understand the respiratory system and endocrine system

CO5. The subject provides the basic knowledge required to understand reproductive system.

									Progra	mme an	d Course N	Mapping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	-	2	2		2	-	3	2	3	2	2	-	-	-	-
CO2	3	1	-	-	2	2		2	-	2	2	3	2	2	-	-	-	-
CO3	3	1	-	-	1	2		2	-	2	2	3	2	2	-	-	-	-
CO4	3	1	-	-	2	2		2	-	2	2	3	2	2	-	-	-	-
CO5	3	1	-	-	2	2		2	-	2	2	3	2	2	-	-	-	-
	1				1=ligh	tly map	pped	•	2= m	oderatel	y mapped		3=strong	ly mappe	d	•		•

BP208P	Pharmaceutical Organic Chemistry –I (Practical)	L	Т	Р	C
Version 2.0		0	0	<mark>4</mark>	<mark>2</mark>
<b>Total Contact Hours</b>	60 Hours				
<b>Pre-requisites/Exposure</b>	Organic chemistry (Practical)				
<b>Co-requisites</b>	Chemistry				
	Course Objectives				



- 1. Write the reaction, name the reaction and orientation of reactions
- 2. Account for reactivity/stability of compounds,
- 3. Identify/confirm the identification of organic compound

## **Course Outcomes (CO)**

CO1. Explain fundamental knowledge on isomerism.

CO2. Explain fundamental knowledge of alkanes and alkenes and their stability.

CO3. Explain the nucleophilic addition reactions.

								Program	mme ai	nd Course	e Mapping	5						
со	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO1 2	PSO 1	PSO 2	PSO3	PSO 4	PSO 5	PS O6
C01	3	1	-	-	2	2	-	2	-	3	2	3	2	2	-	-	-	-
CO2	3	1	-	-	2	2	-	2	-	2	2	3	2	2	-	-	-	-
CO3	3	1	-	-	1	2	-	2	-	2	2	3	2	2	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1=	=lightly	mappe	d	2= m	oderate	ly mapped	ļ	3=stroi	ngly map	ped				



<b>BP20</b>	9P			Bioch	nemist	ry (Pr	actical	)			L		Т		Р		0	l ,
Versi	ion 2.0										-		-		<mark>4</mark>		<mark>2</mark>	
Total	Conta	nct Ho	urs	60 H	ours													
Pre- requi	isites/E	xposu	re	Chem	nistry													
Co-re	equisit	es		Chem	nistry a	nd bio	logy											
									Co	ourse Ob	jectives							
The co	ourse w	ill enat	ole the s	tudent-	teacher	to:												
1. Unc	. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.																	
	2. Understand the metabolism of nutrient molecules in physiological and pathological conditions. 3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.																	
3. Unc	B. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.																	
									Cour	se Outco	omes (Co	<b>C</b> )						
On co	ompleti	on of t	his cou	urse, th	e stude	ent-tea	cher w	ill be a	ble to:									
CO1.	Learn	about	the bas	ic prin	ciples	of Bio	chemis	try										
CO2.	Under	stand t	he Patl	nophys	iology	of Uri	ne.											
	Under			1.	0.			imoto I	Toto									
005.	Under	stanu t					ubony	mate, I	als									
							1	P	rograi	nme and	Course	Mapping	5			1		
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	-	-	2	2	-	2		3	2	3	2		-	-	-	-
CO2	3	1	-	-	2	2		2		2	2	3	2		-	-	-	-
CO3	3	1	-	-	1	2		2		2	2	3	2		-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					1=ligh	tly map	oped		2= mo	oderately	mapped		3=strong	ly mapp	ed			

BP210P	Computer application in pharmacy	L	Т	P	С
Version 2.0		-	-	2	<mark>1</mark>
<b>Total Contact Hours</b>	0 Hours				
Pre-					
requisites/Exposure					
<b>Co-requisites</b>					

# Sem-III

BP 301T	Pharmaceutical Organic Chemistry –II	L	Т	Р	С									
Version 2.0		3	1	0	4									
<b>Total Contact Hours</b>	45 Hrs													
Pre-requisites/Exposure														
<b>Co-requisites</b>			-											
	Co-requisites - Course Objectives													



- 1. Write the structure, name and the type of isomerism of the organic compound
- 2. Write the reaction, name the reaction and orientation of reactions
- 3. Account for reactivity/stability of compounds,
- 4. Prepare organic compounds

### **Course Outcomes (CO)**

CO1. This subject deals with general methods of preparation and reactions of some organic compounds.

CO2. Reactivity and mechanism deal with organic compounds are studied here.

CO3. The syllabus emphasizes on orientation of reactions and application.

CO4. Chemistry of fats and oils are also described here.

CO5. Application and purity of fats and oils also discussed in this subjects.

								P	rogram	me and	Course N	Mapping	5					
CO	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO2	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO3	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO4	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO5	-	1	1	-	-	-	_	_	-	-	1	1	1	-	-	-	-	-
					1=lig	tly ma	apped		2= mo	derately n	napped		3=strong	y mapped	1			

BP 302T	Physical Pharmaceutics-I (Theory)	L	Т	Р	С
Version 2.0		3	1	0	4



	Contac	t Hours	5	45 Hr	S													
Pre-re	equisite	s/Expos	sure															
Co-re	quisites											-						
									Course	e Objecti	ves							
The co	ourse will	enable	the stude	ent-teacl	her to:													
1.	Unders	tand var	ious phy	vsicoche	mical p	ropertie	s of dru	g molec	ules in t	he design	ing the d	osage for	ms					
2.	Know	the princ	iples of	chemica	al kineti	cs & to	use the	n for sta	ability te	esting and	determin	nation of e	expiry dat	e of formu	lations			
3.	Demor	istrate us	se of phy	sicoche	mical p	ropertie	s in the	formula	tion dev	velopment	and eval	uation of	dosage fo	orms.				
								С	ourse O	outcomes	(CO)							
CO 2. <sup>1</sup> CO 3. <sup>1</sup>	The cou This sub The theo	ject exp	lains the	princip	les invo	lved in	dosage	forms/fo			ar insight	t into vari	ious areas	of formul	ation rese	arch and	davalann	aant
	-			e variou		ques and	d metho	ds invol	lved in r	the formu	etics.							lent.
	-			e variou		ques and	d metho	ds invol al prope	lved in r erties in	nicromere	etics. lation de	velopmer						<u></u>
	-			e variou		ques and	d metho	ds invol al prope	lved in r erties in	the formu	etics. lation de	velopmer		PSO 2	PSO3	PSO4	PSO5	PSO6
CO 5.	It is also	useful f	or the de	e various emonstra	ation of	ques and	d metho	ds invol al prope Prog	lved in r erties in gramme	nicromere the formu	etics. lation de	velopmer <b>ping</b>	nt.					
CO 5.	It is also PO1	useful f	or the de	e various emonstra	ation of PO5	ques and physico PO6	d metho	ds invol al prope Prog	lved in r erties in gramme	nicromere the formu	etics. lation de	velopmer ping PO12	nt. PSO 1	PSO 2				
CO 5. 7	It is also PO1 2	useful f PO2 -	For the definition of the defi	e various emonstra	PO5 2	ques and physico <b>PO6</b> 2	d metho ochemic PO7 -	ds invol al prope Prog	lved in r erties in gramme	nicromere the formu e and Cou PO 10	etics. lation de urse Map PO11 -	velopmer ping PO12	nt. <b>PSO 1</b> 2	<b>PSO 2</b> 2				
CO 5. CO CO CO1 CO2	PO1           2           2	useful f PO2 -	For the definition of the defi	PO4	PO5 2 2	ques and physico PO6 2 2	d metho ochemic PO7 -	ds invol al prope Prog	lved in r erties in gramme	nicromere the formu e and Cou PO 10	etics. lation de urse Map PO11 - -	ping PO12 1	nt. PSO 1 2 2	<b>PSO 2</b> 2 2				



1-nghuy nupped 2- moderatery nupped 5-strongly nupped	1=1	ightly mapped 2= moderate	ely mapped 3=strongly	mapped
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BP 303T	Pharmaceu	tical Microbio	logy (Theory)		L	ſ		Р	•		С			
Version 2.0					3	1		0	)		4			
<b>Total Contact Hours</b>	45 Hrs													
Pre-requisites/Exposure	Microbiolog	зy												
Co-requisites	Pharmaceut	ics												
			Course Ol	bjectives										
<ol> <li>Understand methods of identification, cultivation and preservation of various microorganisms</li> </ol>														
2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry														
3. Learn sterility testing of pharmaceutical products.														
<ol> <li>Learn sterility testing of pharmaceutical products.</li> <li>Carried out microbiological standardization of Pharmaceuticals.</li> </ol>														
<ul><li>4. Carried out microbiological standardization of Pharmaceuticals.</li><li>5. Understand the cell culture technology and its applications in pharmaceutical industries.</li></ul>														
			Course Outc	omes (CC	))									
CO1. This subject is designed	•			0										
CO2. This subject also helps	s the understanding	of bacteria using	g staining technic	ques (simp	ole, Grai	n's & Ac	id fast stai	ining) and	d bioche	mical tes	ts (IMVi	C).		
CO3. It also helps in unders	standing of sterility	testing of pharm	aceutical produc	ets.										
CO4. The subject provides t	the designing of ase	eptic area and me	thods for standa	rdization of	of antibi	otics, vita	mins and	amino ac	cids.					
CO5. It also deals with the m	nicrobial spoilage, t	ypes, sources and	d methods in pha	armaceutic	cal indus	stry.								
		P	rogramme and	d Course	марр	ing								
CO PO1 PO2 PO	O3 PO4 PO5	PO6 PO7	PO8 PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6		



CO1	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO2	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO3	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO4	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO5	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
	•			•	1=l	ightly ma	pped	2= r	noderately	y mapped	3=	strongly m	apped					•

BP 304T	Pharmaceutical Engineering (Theory)	L	Т	P	С									
Version 2.0		3	1	0	4									
Total Contact Hours     45 Hrs       Pro requisites/Exposure														
Pre-requisites/Exposure														
Co-requisites     Pharmaceutics														
Course Objectives														
The course will enable the stu 1. To know various unit opera 2. To understand the material	ations used in Pharmaceutical industries.													

3. To perform various processes involved in pharmaceutical manufacturing process.

4. To carry out various test to prevent environmental pollution.

5. To appreciate and comprehend significance of plant lay out design for optimum use of resources

6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

**Course Outcomes (CO)** 



On completion of this course, the student-teacher will be able to:

CO 1. This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.

CO 2. This subject also deals with the various manufacturing process and material handling techniques.

CO 3. It helps in understanding significance of plant layout design for optimum use of resources.

CO 4. It also dealt with various preventive methods for corrosion control in pharmaceutical industries.

**CO 5.** It also helps in understanding the different measures to prevent environmental pollution.

								Progra	amme an	d Course M	lapping							
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO2	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO3	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO4	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO5	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
	1			•	1=1	ightly ma	pped	2= r	noderatel	y mapped	3=	strongly n	napped	•				1

BP 305P	Pharmaceutical Organic Chemistry II – Practical	L	Т	Р	С
Version 2.0		0	0	4	2
<b>Total Contact Hours</b>	60 Hrs				
Pre-requisites/Exposure					
Co-requisites	Pharmaceutical chemistry				
	Course Objectives				



- 1. write the structure, name and the type of isomerism of the organic compound
- 2. write the reaction, name the reaction and orientation of reactions
- 3. Account for reactivity/stability of compounds
- 4. Prepare organic compounds

## **Course Outcomes (CO)**

CO1 Recall the basic knowledge of method of preparation, reactions and properties of Benzene and its derivatives

CO2 Demonstrate a high-level understanding of method of preparation, reactions and properties of phenols, aromatic amines and aromatic acids

CO3 Develop basic knowledge of fats and oils and their analytical constants

CO4 Analyze the synthesis, different reactions, properties, structure and medicinal uses of polynuclear hydrocarbons and substituted alkanes

CO5 Assess the stabilities, theory of strainless rings and reactions of cyclo alkanes

								Program	nme and C	ourse Mapp	ing							
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO2	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO3	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO4	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
CO5	-	1	1	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-
					1=	lightly maj	oped	2= mo	derately m	apped	3=stro	ngly mapp	bed					

BP 306PPhysical Pharmaceutics-I (Practical)LTPC
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Version 2.0										0		0	4	4		2	
Total Contac	et Hours		60 Hrs	S													
Pre-requisite	es/Exposu	re															
Co-requisites	S		Pharm	naceutic	cs												
							Co	ourse O	bjective	S							
The course wi	ill enable t	he stude	nt-teach	ner to:													
1. Understand	l various p	hysicocł	nemical	proper	ties of	drug mo	olecule	es invol	ved in th	e design	ning of d	losage fo	rms				
2. Know the p	principles of	of chemi	cal kine	etics and	d to us	e them f	for stab	bility te	esting and	determ	ination	of expiry	date of f	formulat	ions.		
3. Demonstrat	te use of pl	hysicoch	nemical	proper	ties in	the form	nulation	n devel	lopment	and eval	luation c	f dosage	forms				
							Cours	se Out	comes ((	C <b>O</b> )							
CO 1. The co CO 2. Practic CO 3. It also CO 4. Demor CO 5. This su	al compon helps in ur nstrate use	ents of t nderstand of physi	he subje ding pri cochem	ect help nciples nical pro	o the st s of che opertie	udent to emical k es in the	mical p o get a inetics formul	propert better i and to lation c	ies, and nsight in use ther levelopn	principle to vario n in dete nent and	us areas ermining evaluati	of form	ulation re	esearch a	nd deve	lopment	
CO 2. Practic CO 3. It also 2 CO 4. Demor	al compon helps in ur nstrate use	ents of t nderstand of physi	he subje ding pri cochem	ect help nciples nical pro	o the st s of che opertie	udent to emical k es in the	mical j o get a inetics formul	propert better i and to lation c s of ind	ies, and nsight in use ther levelopn	principle to vario n in dete nent and losage fo	us areas ermining evaluati	of form	ulation re	esearch a	nd deve	lopment	
CO 2. Practic CO 3. It also 2 CO 4. Demor	al compon helps in ur nstrate use ubject also	ents of t nderstand of physi	he subje ding pri cochem	ect help nciples nical pro	o the st s of che opertie	udent to emical k es in the	mical j o get a inetics formul	propert better i and to lation c s of ind	ies, and insight in use ther levelopn ividual c	principle to vario n in dete nent and losage fo	us areas ermining evaluati	of form	ulation re	esearch a	nd deve	lopment	



CO2	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-
CO3	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-
CO4	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-
CO5	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-
				•	1=l	ightly ma	pped	2=	moderate	ly mapped	3	=strongly r	napped	1	•		•	

BP 307P	Pharmaceutical Microbiology (Practical)	L	Т	Р	С									
Version 2.0		0	0	4	2									
<b>Total Contact Hours</b>	60 Hrs													
Pre-requisites/Exposure														
Co-requisites -														
Course Objectives														
The course will enable the stud	dent-teacher to:													
1. Understand methods of ider	ntification, cultivation and preservation of various m	icroorganis	ms											
2. To understand the importan	ce and implementation of sterilization in pharmaceu	tical proces	sing and indust	ry										
3. Learn sterility testing of pha	armaceutical products.													
4. Carried out microbiological	standardization of Pharmaceuticals.													
5. Understand the cell culture	technology and its applications in pharmaceutical in	dustries.												
	Course Outcomes (	<b>CO</b> )												



- **CO1.** These subjects deal with the study of all categories of microorganisms like bacteria and fungi and virus.
- **CO2.** It helps in learning of different techniques of sterilization, BOD detection.
- **CO3.** It deals the culture and microbial assay study.
- **CO4.** This subject deal with the study the mortality and isolation of culture.
- **CO5.** It also deals the sterility testing, Biochemical assay

							P	rogram	me and	l Course	Mappi	ng						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
C01	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO2	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO3	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO4	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
CO5	-	-	-	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-
					1=l	ightly ma	pped	2= m	oderately	mapped	3=s	trongly ma	apped					

BP 308P	Pharmaceutical Engineering (Practical)	L	Т	Р	С												
Version 2.0		0	0	4	2												
Total Contact Hours	60 Hours				I												
Pre-requisites/Exposure																	
Co-requisites		-															
	Course Objecti	ves		Course Objectives													



1. To know various unit operations used in Pharmaceutical industries.

2. To understand the material handling techniques.

3. To perform various processes involved in pharmaceutical manufacturing process.

4. To carry out various test to prevent environmental pollution.

5. To appreciate and comprehend significance of plant lay out design for optimum use of resources

6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries

## **Course Outcomes (CO)**

**CO1.** To imparts fundamental knowledge of various unit operations used in pharmaceutical industry.

CO2. It deals with the determination of radiation constant of different metals and paints.

CO3. It also helps to understand the steam distillation process and heat transfer constant.

CO4. It is also applicable for the construction of drying curves (Psychometric charts).

**CO5.** This subject also useful for understanding size reduction methods, size analysis and study industrial instruments used in unit operation processes.

							P	rogram	me an	d Cours	e Mapp	ing						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO2	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO3	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
CO4	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-



CO5	3	-	2	-	3	3	-	2	-	-	3	2	3	2	-	-	-	-
					1=	lightly ma	pped	2= n	noderately	v mapped	3=	strongly m	apped					

## Sem-IV

BP401T	Pharmaceutical Organic Chemistry III– Theory	L	Т	Р	С									
Version 2.0		3	1	0	4									
<b>Total Contact Hours</b>	ours 45 Hours													
Pre-requisites/Exposure	Organic Chemistry	Organic Chemistry												
Co-requisites	Pharmaceutical Organic Chemistry-III													
	Course Objective	<b>S</b>												
The course will enable the	student-teacher to:													
1. Understand the methods	of preparation and properties of organic compounds													
2. Explain the stereo chem	ical aspects of organic compounds and stereo chemica	l reacti	ons											
3. Know the medicinal use	s and other applications of organic compounds													
	Course Outcomes (C	C <b>O</b> )												
On completion of this cour	rse, the student-teacher will be able to:													



- **CO1.** Able to explain chemistry of important heterocyclic compounds.
- **CO2.** To describe detailed mechanisms for common naming reactions.
- **CO3.** It imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions.
- **CO4.** To acquire the knowledge and understanding of medicinal and other uses of organic compounds.

								Progra	amme a	nd Cour	se Map	ping						
CO																PSO6		
CO1	01 3 3 1																	
CO2																		
CO3	-	1	-	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		1	•	1=	lightly	mapped		2= n	noderate	ely mappe	ed	3=	strongly	mapped			1	

BP402T	Medicinal Chemistry I – Theory	L	Т	P	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hours				
Pre- requisites/Exposure	Chemistry of drugs				
<b>Co-requisites</b>	Pharmaceutical Chemistry				
	Course	Objectives			
The course will enable th	e student-teacher to:				
1. Understand the chemis	try of drugs with respect to their pharmacological	ogical activi	ty		



2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs

3. Know the Structural Activity Relationship (SAR) of different class of drugs

4. Write the chemical synthesis of some drugs

## **Course Outcomes (CO)**

**CO1.** To understand the chemistry of drugs with respect to their pharmacological activity.

CO2. To understand the drug metabolic pathways, adverse effect and therapeutic value of drugs

**CO3.** To know the structural activity relationship of different class of drugs.

**CO4.** Well acquainted with the synthesis of some important class of drugs.

								Pro	ogram	me an	d Cour	se Map	ping					
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	1	1			2		3			3	-	-	-	-	-
CO3		1	-	-	-	-	-	-	3	3	-	-	-	3	-	-	-	-
CO4		1	1		2		2	-	2	-	-	_	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1=	=lightly	y mapp	bed		2 = moc	leratel	y mappe	ed	3=	strongl	y mappe	d		

BP403T	Physical Pharmaceutics II – Theory	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 hours				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Physical Pharmaceutics				



									Cours	e Objec	tives							
The co	ourse w	ill enal	ble the	student	t-teache	er to:												
1. Unc	lerstan	d vario	us phys	sicoche	mical p	oroperti	es of d	rug mo	lecules	in the de	esigning	the dosa	ge forms					
2. Kno	ow the	princip	les of c	hemica	al kinet	ics & to	o use th	em for	stabilit	y testing	g and det	erminati	on of exp	oiry date	of formu	lations		
3. Den	nonstra	ate use	of phys	icoche	mical p	oroperti	es in th	e form	ulation	develop	ment and	d evaluat	ion of do	sage for	ms.			
								C	ourse (	Outcome	es (CO)							
CO2. CO3.	-				•			perties	in the f		on devel	lopment	ry date o and eval			forms.		
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b>	-	1	-	-	-	-	-	-	-	3	-	3	-	-	-	-	-	-
CO3	-	-	1	-	-	2	-	3	-	_	-	-	1	-	-	-	-	-
<b>CO4</b>	-	2	-	-	-	-	3	-	3	_	3	-	-	1	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1=	-lightly	mappe	ed	2=	moder	ately ma	upped	3	strongl	y mappe	d			

BP404T	Pharmacology I – Theory	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hours				



Pre-re	equisit	es/Exp	osure	Huma	an anato	my and	d Physi	ology										
Co-re	quisite	S		Patho	physiol	ogy												
									Cours	se Object	tives							
Upon	comple	etion of	this co	urse th	e studer	nt shou	ld be al	ble to:										
		-	narmaco	-				-		-								
-				U		U	•			macrom								
	•	-		-		-	-			treatment	of vario	ous disea	ses.					
			t of dru	-		•		-										
5. App	preciate	correl	ation of	f pharm	acolog	y with	other bi	io medi	cal scie	ences								
								C	ourse	Outcome	s (CO)							
	CO2. They would have studied in detailed about mechanism of drug action at organ system/sub cellular/ macromolecular levels. CO3. They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases. CO4. They would get an idea about correlation of pharmacology with other bio medical sciences Programme and Course Mapping																	
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1	-	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-
CO2	-	-	-	-	-	2	-	3	-	-	-	-	-	-	-	-	-	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	2	-	-	-	-	-	-	3	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



BP405T		Pharn Theor		osy an	d Phyt	ochemi	istry I–		L	r	Г	]	P		С	
Version 2.0			•						3	1	L	(	)		4	
Total Contact H	Iours	45 Ho	urs													
Pre-requisites/I	Exposure	Pharm	acogno	osy												
<b>Co-requisites</b>		Pharm	acogne	osy												
							Course	Objecti	ves							
Upon completion	n of this co	ourse the	e studei	nt shou	ld be ab	ole to										
1. To know the t	-				-		crude d	rugs								
2. To know the c	-					ure										
3. Know the eva		-			0											
4. To carry out t	he microsc	opic an	d morp	hologic	al eval	uation of	of crude	e drugs								
						Co	urse O	utcomes	(CO)							
	owledge of	f the cru	ide dru	gs, thei	r uses a	nd che	-		on of cru	de drugs						
	e evaluatio		-			U	1	C	1 1							
CO4. Able to c	arry out th	e micro	scopic	and mo	orpholog				0							
TT		[]				Progr	amme	and Co	urse Ma	pping			1	Γ	[	[
CO PO1 PO	D2 PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1 · ·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b> 1 -	2	-	3	-	-	3		3	-	-	_	1	-	-	-	-



CO3	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	1	2	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1=lightly mapped 2= moderately map										oped	3=	=strongly	/ mapped	1			

BP406P	Medicinal Chemistry I – Practical	L	Т	P	С
Version 2.0		0	0	4	2
<b>Total Contact Hours</b>	60 Hours			·	
Pre-requisites/Exposure	Medicinal Chemistry				
Co-requisites	Medicinal Chemistry				
	Course O	bjectives			
Upon completion of this co	ourse the student should be able to				
<ol> <li>Understand the synthetic</li> <li>Know the mechanism of</li> </ol>	ry of drugs with respect to their pharmacologic c procedure and therapeutic value of drugs f reaction and Structural Activity Relationship d basics required for the assay of some drugs	,	rent class of dr	ugs	
	Course Out	comes (CO)			
CO1. It imparts the knowle	edge of synthesizing, characterization and puri	fication of med	licinal compour	nds and intermediat	tes.
CO2. To analyze the select	ted drugs present in dosage forms and to deter	mine the percer	ntage purity.		
CO3 Able to study physic	chemical properties of drug				

**CO3.** Able to study physiochemical properties of drug.



								Prog	ramm	e and Co	ourse M	apping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	2		2		3	-	-	-	-	-	-	1	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	•	•		1=	lightly	mappe	ed	2=	moder	ately ma	pped		strongl	y mapped	1	•	•	•

BP407P	Physical Pharmaceutics II – Practical	L	Т	Р	С									
Version 2.0		0	0	4	2									
<b>Total Contact Hours</b>	60 Hours													
Pre-requisites/Exposure	Physical Pharmaceutics- I													
Co-requisites -														
Course Objectives														
Upon completion of this co	ourse the student should be able to													
2. Know the principles of c	sicochemical properties of drug molecules in the d chemical kinetics & to use them for stability testin sicochemical properties in the formulation develop	g and deter	mination of ex	piry date of formul	lations									
	Course Outcom	es (CO)												



CO1. State the physicochemical properties of drug molecules

CO2. Analyze the chemical stability tests of various drug products and determination of expiry date of formulations

**CO3.** Have basic knowledge of physicochemical properties in the formulation development and evaluation of dosage forms.

								Prog	ramm	e and Co	ourse Ma	apping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3		3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	•	•	•	1=	lightly	mappe	ed	2=	moder	ately ma	pped	3	=strongl	y mapped	ł	•	•	

BP408P	Pharmacology I – Practical	L	Т	Р	С
Version 2.0		0	0	4	2
<b>Total Contact Hours</b>	60 Hours				
Pre-requisites/Exposure	Pharmacology				
<b>Co-requisites</b>	Pathophysiology				
	Course Object	tives			
Upon completion of this co	ourse the student should be able to				



1. Understand the pharmacological actions of different categories of drugs.

2. Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels.

3. Observe the effect of drugs on animals by simulated experiments.

## **Course Outcomes (CO)**

**CO1.** Knowledge of the practical aspect of general pharmacological techniques.

**CO2.** Understand the effect of drugs acting on CNS and PNS using animal simulator.

	Programme and Course Mapping																	
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	3	-	-	3	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1=	lightly	mappe	ed	2=	moder	ately ma	pped	3	strongl	y mapped	1			

BP409P	Pharmacognosy and Phytochemistry I (Practical)	L	Т	Р	С
Version 2.0		0	0	4	2



Total	Conta	ct Hour	s	60 Ho	ours													
Pre-re	equisit	es/Expo	sure															
Co-re	quisite	es		Pharm	nacogno	osy												
									Course	Object	ives							
Upon	comple	etion of	this co	urse th	e stude	nt shoul	ld be ab	le to										
1. Und	derstan	d variou	s phys	icoche	mical p	ropertie	es of dru	ıg mole	cules ir	the de	signing t	he dosag	e forms					
2. Kno	ow the	principle	es of c	hemica	l kineti	cs & to	use the	m for s	tability	testing	and dete	rminatio	n of exp	iry date	of formu	lations		
3. Der	nonstra	ate use o	f phys	icochei	mical p	ropertie	s in the	formul	lation d	evelopn	nent and	evaluatio	on of do	sage for	ms.			
								Cou	urse Ou	itcomes	s (CO)							
CO1.		the phys					-											
CO2.					-						mination	-	-					
CO3.	Have	basic kr	nowled	lge of p	ohysico	chemica	al prope	erties in	the for	mulatio	n develo	pment ai	nd evalu	ation of	dosage f	orms.		
								Progr	amme	and Co	urse Ma	pping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	1	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		I		1=	lightly	mapped	1	2= t	moderat	ely map	med	3=	strongly	, manne	h			



## **Semester-V**

BP501T	Medicinal Chemistry-II (Theory)	L	Т	Р	С	
Version 2.0		3	1	0	4	
Total Contact Hours	45 Hours					
Pre-requisites/Exposure	Medicinal Chemistry					
Co-requisites	Chemical Synthesis					
	Course Object	ctives				
Upon completion of the co	urse the student shall be able to					
1. Understand the chemi	stry of drugs with respect to their pharmacological	l activity				
2. Understand the drug n	netabolic pathways, adverse effect and therapeutic	value of	drugs			
3. Know the Structural A	Activity Relationship of different class of drugs					
4. Study the chemical sy	• • • •					
	Course Outcom	es (CO)				
CO1. Get familiar with t	the chemistry and synthesis of medicinal substance	es.				
CO2. Understand the co	ncept of structure activity relationships of drugs, i	mportance	e of physicocher	nical properties a	and metabolism of	f drugs.
CO3. Learn about horm	one related drugs.					
CO4. To impart fundam	ental knowledge on the structure, chemistry, and t	herapeutio	e value of drugs.			
	e recording Condicesconder drugs and their structure					
CO5. Acquire knowledg	e regarding Cardiovascular drugs and their structu	ires				
	Programme and C	ourse Ma	apping			
CO PO1 PO2 PO3	PO4         PO5         PO6         PO7         PO8         PO9         PO	PO11	PO12 PSO	PSO PSO3	PSO4 PSO5	PSO6



										10			1	2				
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	1	-	-	2	-	-	-	-	2	-	2	-	-	-	-	-	-
<b>CO4</b>	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
1=lightly mapped 2= moderately mapped								pped	3	B=strongl	y mapped	1						

BP502T	Industrial Pharmacy I– Theory	L	Т	Р	С									
Version 2.0		3	1	0	4									
<b>Total Contact Hours</b>	45 Hours													
Pre-requisites/Exposure Pharmaceutics														
<b>Co-requisites</b>														
	Course Object	ives												
Upon completion of the cou	rse the student shall be able to:													
1. Know the various	pharmaceutical dosage forms and their manufactu	ring tech	niques.											
2. Know various cor	nsiderations in development of pharmaceutical dos	age form	8.											
3. Formulate solid, 1	3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their Quality.													
	Course Outcomes (CO)													

CO1: To understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the



performance of the drug product.

**CO2:** To get familiar with Pre formulation studies

**CO3:** To know formulation and evaluation of solid dosage form like tablets, capsules

**CO4:** To get familiar with aseptic conditions and formulation of parenteral preparation.

**CO5:** To understand various considerations in development of cosmetics.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	-	-	1	-	1		3		3	-	3	-	-	-	-	-	-	-
CO2	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO3		1	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	-
CO4	-	-	1	-	2	-	-	3		3	-	-	-	-	-	3	-	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1=l	ightly r	napped		2= n	noderate	ely maj	oped	3=	=strongl	y mappe	ed			

BP503T	Pharmacology II – Theory	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hours				
Pre-requisites/Exposure	Pharmacology-I				
<b>Co-requisites</b>	HAP-II and Pathophysiology				
	Course Obje	ctives			



Upon completion of this course the student should be able to

- 1. Understand the mechanism of drug action and its relevance in the treatment of different diseases
- 2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
- 3. Demonstrate the various receptor actions using isolated tissue preparation
- 4. Appreciate correlation of pharmacology with related medical sciences

#### **Course Outcomes (CO)**

**CO1.** To impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body.

**CO2.** To emphasis on the basic concepts of bioassay.

**CO3.** Apprise the students with the various effects of drugs on human body.

CO4. Acquire knowledge about Metabolism & excretion of drugs, principles of Clinical Pharmacokinetics.

**CO5.** Understand the pharmacology of CVS.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1			2			3											
CO2		1				2					3							
CO3			1		2				3			3		3				
CO4		1	1	2														
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	•	•	•	1=l	ightly n	napped	•	ly map	oped	3=	strongl	y mapp	ed	•	•	•		



BP504	4T			Phari Theor	0	osy an	d Phyte	ochemi	stry II-	-	L	-	ſ	]	P		С	
Versio	on 2.0										3	1		0	)		4	
Total	Conta	ct Hou	rs	45 Hr	s													
Pre-re	equisit	es/Exp	osure	Pharm	nacogno	osy & P	hytoche	emistry	-I									
Co-re	quisite	s		Reme	dial Bio	ology												
								(	Course	Objecti	ves							
Upon	comple	etion of	the co	urse, th	e studei	nt shall	be able	; -										
	1. To	know t	the mod	dern ext	traction	technic	ques, ch	naracter	ization	and iden	tificatio	n of the	herbal di	ugs and	phytoco	nstituen	ts	
	2. To	unders	tand th	e prepa	ration a	nd dev	elopme	nt of he	rbal for	mulatio	n.							
1	3. To	unders	tand th	e herba	l drug i	nteracti	ons											
	4. To	carryo	ut isola	tion an	d identi	ficatior	of phy	rtoconst	ituents									
ļ																		
<u> </u>								Cou	arse Ou	itcomes	(CO)							
	CO2. CO3. CO4.	Get fa Under To giv	miliar v stand s ve know	with isc tudy of vledge a	olation a produc about ap	and iden ing the oplication	ntificati plants on of la	on and and and and phy test ana	industri tochem lytical	ally pro	duction of ough plates.	produced of secon ant tissue	dary met	abolites	0			
								Progr	amme	and Cou	ırse Ma	pping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
<b>CO1</b>	1			2				2						1				
CO2									2									
CO3		1	1	2	2							2		2				
<b>CO4</b>			1				2											
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



1=lightly mapped	2= moderately mapped	3=strongly mapped	
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BP505T	[			Phar	maceu	tical Ju	ırispru	dence –	- Theo	ry	L	r	Г	I	2		С	
Version	a 2.0										3	]	L	(	0		4	
Total C	ontact	t Hou	rs	45 Ho	ours													
Pre-req	uisites	s/Expo	osure	Jurisp	orudenc	e												
Co-requ	uisites			Rules	and R	egulatic	n											
								(	Course	e Object	tives							
Upon co	omplet	ion of	this co	urse th	e stude	ent shou	ld be al	ble to un	ndersta	ind:								
1. 7	The Ph	armac	eutical	legisla	ations a	nd thei	r implic	ations in	n the d	levelopn	nent and	marketi	ng of pha	armaceut	icals.			
2. V	Variou	s India	an pha	maceu	tical A	cts and	Laws.											
3. I	Regula	tory a	uthorit	ies & a	igencie	s gover	ning the	e manufa	acture	& sale c	of Pharm	naceutic	als.					
4. T	The cod	le of e	thics d	uring t	he pha	maceut	tical pra	ictice										
								Cou	urse O	outcome	s (CO)							
(	CO1. 7	This sr	ibiect i	s desig	ned to	impart	fundam	ental kn	nowled	lge on V	arious A	ct						
			5	U		•				0								
(	CO2. 1	The su	bject p	rovides	s the ba	sic knc	wledge	require	d to ur	nderstan	d the var	rious dise	ciplines of	of pharma	acy.			
(	CO3. 🛛	This su	ıbject o	leals w	ith MT	P act.												
(	C <b>O4.</b> I	Provid	e Knov	vledge	about	Indian I	Pharma	copoeia,	, Britis	h Pharm	acopeia	and othe	er Regula	atory age	ncies.			
(	C <b>O5.</b> I	Provid	e Knov	vledge	about	Narcoti	c and P	sychotro	opic su	Ibstance	act.							
								Progra	amme	and Co	ourse Ma	apping						
<i>a</i> .			DOA	DO 1	<b>DO -</b>	DO				PO			PSO	PSO	Dagos	DOO 1	<b>D</b> CO <b>-</b>	DOC (
CO F	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	10	PO11	PO12	1	2	PSO3	PSO4	PSO5	PSO6



<b>CO1</b>			2		2		2				3						
CO2	1		1	2		3			2		3						
CO3									2								
<b>CO4</b>	3		1			3					1	3					
CO5		2			2		1		1								
			1=lightly mapped					2=	moder	ately ma	pped	3	=strongl	y mapped	1		

BP506P	Pharmacy I – Practical	L	Т	Р	С
Version 2.0		0	0	4	2
<b>Total Contact Hours</b>	60 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Pharmaceutics				
	Course Object	ives			
The course will enable the	student-teacher to:				
1. To get familiarize wit	h technology and production of pharmaceutical dos	sage form	n.		
	Course Outcome	s (CO)			
	th technology and production of pharmaceutical do Idea on Quality control test of (as per IP) marketed	U		rganic Oualitative	e Analysis.
			-		
COS: Learn to prepare a	and evaluate tablets, capsule, cold / vanishing crear	n, omun	ent.		

CO4: Learn to test containers.



**CO5:** Learn to prepare eye drops and eye ointment.

								Prog	ramme	e and Co	ourse M	apping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1					1						3						
CO2		1		2				2										
CO3							1				3							
<b>CO4</b>		1			1								1					
CO5	2					3		2										
				1=	-lightly	mappe	ed	2=	moder	ately ma	apped	3	=strongl	y mappe	d			

BP507P	Pharmacology II – Practical	L	Т	P	С
Version 2.0		-	-	4	2
<b>Total Contact Hours</b>	60 Hours				
Pre-requisites/Exposure	Pharmacology-I (Practical)				
<b>Co-requisites</b>	Human Anatomy and Physiology				
	Course Objec	tives			
This subject will apprise the	e students with the following:				
1. To get familiar with	h various effects of drugs on human body.				
2. To demonstrate lab	oratory techniques and animal experiments by sim	ulated exp	periments by so	ftwares and videos	
	Course Outcome	es (CO)			
CO1. Apprise the students	with the various effects of drugs on human body.				

CO2. Use of computer simulated CDs or Video cassettes for pharmacology practical.



CO3. Learn about different routes of administration of drugs in mice/rats.

CO4. Learn to do bioassay of various drug.

CO5. Know about *in-vitro* pharmacology and physiological salt solutions.

								Prog	gramme	e and Co	ourse M	apping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1																	
CO2			1		3	2			2		3		3					
CO3				1														
CO4		1				2												
CO5	1				1					2								
		•		1=	lightly	mappe	ed	2=	moder	ately ma	pped	3	=strongl	y mapped	d		•	

BP508P	Pharmacognosy and Phytochemistry II – Practical	L	Т	Р	С
Version 2.0		-	-	4	2
<b>Total Contact Hours</b>	60 hours				
Pre-requisites/Exposure	Pharmacognosy & Phytochemistry-I Practical				
<b>Co-requisites</b>	Remedial Biology Practical				
	Course Objectiv	ves			
Upon completion of the co	urse, the student shall be able				

1. To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents



- 2. To understand the preparation and development of herbal formulation.
- 3. To understand the herbal drug interactions
- 4. To carryout isolation and identification of phytoconstituents

CO1. Get familiar with the practical aspects of characterization and identification of the herbal drugs and phytoconstituents

**CO2.** Learn about isolation and identification of phytoconstituents

**CO3.** Learn the preparation and development of herbal formulation.

CO4. Understand Analysis of crude drugs by chemical tests.

**CO5.** Get familiar with TLC of herbal extracts.

								Progra	amme a	nd Cou	irse Maj	pping						
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	1		2			2					2							
CO2		3						1										
CO3	1				3			1			2							
CO4														2				
CO5	2			2						1								
				1=	lightly	mapped		2= n	noderate	ely map	ped	3=	strongly	mapped	1			



## **Semester-VI**

BP601T	Medicinal Chemistry-III (Theory)	L	Т	Р	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Medicinal Chemistry and Pharmacology				
Co-requisites	QSAR Drug design				
	Course Objectives				
The course will enable the stud	ent-teacher to:				
1. Understand the imp	ortance of drug design and different techniques of drug	g design.			
2. Understand the chem	nistry of drugs with respect to their biological activity.				
3. Know the metabolist	m, adverse effects and therapeutic value of drugs.				
4. Know the importance	e of SAR of drugs.				
	Course Outcomes (Co	0)			
<b>CO 1.</b> Understand fund	lamental knowledge on the structure, function and sign	ificance of Drugs.			
<b>CO 2.</b> discuss various	mechanism of action of drugs	-			
CO 3. Provide knowled	dge of Synthesis and Metabolism of drugs.				
CO 4. Provide knowle	dge of Structure Activity Relationships (SAR) theraped	utic uses of drugs.			
CO 5. Provide knowled	day of montroted anna antion				



							Prog	ramme	and Cou	ırse Mapp	oing			
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2					3									
CO3		2			3	3								1
<b>CO4</b>											3	3		
CO5	2											3		
	1	1	1	1=ligl	htly map	ped	2=	modera	tely map	ped	3=stro	ongly map	ped	1

BP602T	Pharmacology III – Theory	L	Т	Р	С
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmacology-II				
Co-requisites	HAP-II and Pathophysiology				
	<b>Course Objectives</b>				
The course will enable the student-tea	cher to:				
1. Get familiar with the basic bioch	nemical aspects of human body and its relation to diseases.				
2. Understand various drugs used f	for various ailments.				
3. Understand mechanism of action	n adverse drug reactions.				
4. Understand the basic strategies t	o manage the poisoning.				
	Course Outcomes (CO)				



- CO 1. Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
- CO 2. Comprehend the principles of toxicology and treatment of various poisonings
- **CO 3**. Appreciate correlation of pharmacology with related medical sciences
- **CO 4**. Know the toxicity of the Drugs and their treatments.
- **CO 5.** Know the Concepts of Chronopharmacology

							Program	nme and	Course	Mapping				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2					3									
CO3			2		3	3								
<b>CO4</b>			1								3	3	2	
CO5														
		1	1	1=light	ly mappe	d	2= mo	oderately	mapped	3	=strongly	mapped	I	

BP603T	Herbal Drug Technology (Theory)	L	Т	Р	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs		1		
Pre-requisites/Exposure	Pharmacognosy & Phytochemistry – II (Theory)				
Co-requisites	Pharmacognosy & Phytochemistry – I (Theory)				



						(	Course O	bjectives						
The cour	rse will ei	nable the s	student-tea	acher to:										
1.	Know to e	evaluate th	ne quality	of raw ma	aterial.									
2.	Know the	guideline	s for qual	ity of herl	bal drug.									
3.	Know abo	out herbal	cosmetics	s, natural s	sweetener	s etc.								
4.	Know abo	out moder	n concepts	s such as	nutraceuti	cals								
						Co	urse Out	comes (C	0)					
<b>CO 1.</b> U	Inderstand	l raw mate	erial as so	urce of he	rbal drug	s from cul	tivation to	o herbal d	rug produ	ict.				
COVV	now the	WHO and	ICH mid	alinas for	avaluatio	n of harb	aldruge							
CU 2. K		w no allu		ennes tor	evaluatio		ai urugs.							
<b>СО 3.</b> К	Know the h	nerbal cos	metics, na	tural swe	eteners, n	utraceutic	als.							
CO 4. A	ppreciate	patenting	of herbal	drugs, Gl	MP.									
		patenting		-										
CO 5. K	Know abou			-		metics, an	d the vari	ous excip	ients usec	l in Herbal o	cosmetics a	nd to know	the signific	cance of
	Know abou			-		metics, an	d the vari	ous excip	ients usec	l in Herbal o	cosmetics a	nd to know	the signific	cance of
<b>СО 5.</b> К	Know abou			-			d the vari				cosmetics a	nd to know	the signific	cance of
<b>СО 5.</b> К	Know abou			-							cosmetics a	nd to know	the signific	eance of PSO 2
CO 5. K neutrace	Know abou	it the raw	materials	used in H	lerbal cost	Progr	amme ar	nd Course	e Mappin	g				
CO 5. K neutrace	Know abou euticals.	it the raw	materials	used in H	lerbal cost	Progr	amme ar	nd Course	e Mappin	g			PSO 1	
CO 5. K neutrace CO CO1	Know abou euticals.	it the raw	materials	used in H	erbal cosi	Progr	amme ar	nd Course	e Mappin	g			<b>PSO 1</b>	PSO 2
CO 5. K neutrace CO CO1 CO2 CO3	Know abou euticals.	it the raw	materials	used in H	PO5	Progr PO6	amme ar	nd Course PO8	e Mappin	g	PO11	PO12	<b>PSO 1</b> 1 1	PSO 2
CO 5. K neutrace CO CO1 CO2	Know abou euticals.	it the raw	materials	used in H	PO5	Progr PO6	amme ar	nd Course	e Mappin	g			<b>PSO 1</b> 1 1	PSO 2



1=lightly mapped	2= moderately mapped	3=strongly mapped	
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<b>Biopharmaceutics And Pharmacokinetics- (Theory)</b>	L	Т	Р	С
	3	1	0	4
45 Hrs	- I - I			
Pharmaceutics				
Course Objectives				
eacher to:				
Biopharmaceutics and Pharmacokinetics and their significance.				
ig concentration-time data to calculate the pharmacokinetic parameter elimination.	rs to describe t	the kinetics of drug a	bsorp	tion,
ailability and bioequivalence of drug products and their significance.				
Course Outcomes (CO)				
s in Biopharmaceutics and Pharmacokinetics and their significance.				
ma drug concentration-time data to calculate the pharmacokinetic ; , excretion, elimination.	parameters to	describe the kinetic	s of o	drug
ioavailability and bioequivalence of drug products and their significan	ice.			
okinetic parameters, their significance & applications				
Programme and Course Mapping				
	45 Hrs Pharmaceutics Course Objectives eacher to: Biopharmaceutics and Pharmacokinetics and their significance. Ig concentration-time data to calculate the pharmacokinetic parameter elimination. ailability and bioequivalence of drug products and their significance. Course Outcomes (CO) s in Biopharmaceutics and Pharmacokinetics and their significance. ma drug concentration-time data to calculate the pharmacokinetic garameter ioavailability and bioequivalence of drug products and their significance. bioavailability and bioequivalence of drug products and their significance of the pharmacokinetic garameters, their significance & applications	45 Hrs       3         45 Hrs       Pharmaceutics         Course Objectives         Course Objectives         Course Objectives         Biopharmaceutics and Pharmacokinetics and their significance.         It is a colspan="2">It is a colspan="2" It is a colspan	3       1         45 Hrs       Pharmaceutics         Course Objectives         Course Objectives         Course Objectives         acher to:         Biopharmaceutics and Pharmacokinetics and their significance.         ag concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug al elimination.         ailability and bioequivalence of drug products and their significance.         Course Outcomes (CO)         s in Biopharmaceutics and Pharmacokinetics and their significance.         mad rug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetic excretion, elimination.         ioavailability and bioequivalence of drug products and their significance.         mad rug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetic excretion, elimination.         ioavailability and bioequivalence of drug products and their significance.         wither significance & applications	3       1       0         45 Hrs       Pharmaceutics         Pharmaceutics



CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2					3									2
CO3					3	3								
CO4	3											3		
			1=	=lightly m	apped	2= n	noderately	mapped		3=strongly	mapped	•	•	

BP605T	Pharmaceutical Biotechnology (Theory)	L	Т	Р	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs		<u> </u>		
Pre-requisites/Exposure	Pharmaceutical Microbiology				
Co-requisites	Pharmaceutics				
	Course Objectives				
The course will enable the stud	dent-teacher to:				
1. Understand the imp	oortance of Immobilized enzymes in Pharmaceutical Industries				
2. Genetic engineering	g applications in relation to production of pharmaceuticals				
3. Importance of Mon	oclonal antibodies in Industries				
4. Appreciate the use of	of microorganisms in fermentation technology.				
	Course Outcomes (CO)				



**CO1.** Understanding the importance of Immobilized enzymes in Pharmaceutical Industries

**CO2.** Applications of genetic engineering and protein engineering in relation to production of pharmaceuticals.

**CO3.** Importance of Monoclonal antibodies in Industries.

**CO4.** Appreciate the use of microorganisms in fermentation technology.

**CO5.** To know the about immunity and various immunoblotting techniques.

						]	Program	me and	Course I	Mapping				
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2					3									
CO3					3	3								
CO4	3											3		
CO5											3	3		
		•		1=lightly	y mapped	d	2= mo	derately	mapped	3=	strongly r	napped		

BP606T	Pharmaceutical Quality Assurance (Theory)	L	Т	Р	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Industrial Pharmacy - I				
Co-requisites	Pharmaceutics				



#### **Course Objectives**

The course will enable the student-teacher to:

- 1. Understand the cGMP aspects in a pharmaceutical industry
- 2. Appreciate the importance of documentation
- 3. Understand the scope of quality certifications applicable to pharmaceutical
- 4. Understand the responsibilities of QA 🗆 🗆 Industries & QC departments

**Course Outcomes (CO)** 

**CO 1.** Understand the concept of Quality Control and Quality Assurance.

**CO 2.** Appreciate the importance of documentation

**CO 3.** Understand the scope of quality certifications applicable to pharmaceutical industries

CO 4. Understand the responsibilities of QA & QC departments

**CO 5.** Understand the concept of validation and warehousing practices.

							Progra	amme ar	nd Cours	se Mappin	g			
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3	3											3	
CO2		3			3									3
CO3					3	3								
CO4	3							3				3		
CO5											3	3		
				1=ligh	tly mapp	bed	2= n	noderate	ly mappe	ed	3=strong	ly mappe	d	



BP607P	Medicinal Chemistry-III (Practical)	L	Т	Р	С
Version 2.0		-	-	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Medicinal Chemistry				
Co-requisites	Medicinal Chemistry				
	Course Objecti	ves			
The course will enable the s	tudent-teacher to:				
1. Understand the in	mportance of drug design and different techniques of o	lrug design.			
2 Understand the cl	nemistry of drugs with respect to their biological activ	ity			
		ity.			
3. Know the metabo	lism, adverse effects and therapeutic value of drugs.				
4. Know the importa	ance of SAR of drugs.				
	Course Outcomes	(CO)			
CO 1. Understand f	undamental knowledge on the structure, function and	significance of Dr	ugs.		
CO 2. Discuss varie	ous mechanism of action of drugs				
CO 3. Provide know	vledge of Synthesis and Metabolism of drugs.				
CO 4. Provide know	vledge of Structure Activity Relationships (SAR) there	apeutic uses of dru	.gs.		
CO 5 Provide Imor	vledge of marketed preparation.				



							Pr	ogramn	ne and (	Course M	apping			
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2					3									
CO3					3	3								
CO4											3	3		
CO5												3		1
		l	l	1=li	ghtly m	apped	<u> </u>	2 = mode	erately n	napped	3=	strongly	mapped	

BP608P	Pharmacology-III (Practical)	L	Т	Р	С							
Version 2.0		0	0	4	2							
Total Contact Hours	60 Hrs											
Pre-requisites/Exposure     Pharmacology-II (Practical)												
Co-requisites HAP-II and Pathophysiology												
	Course Objectives											
The course will enable the student-teach	er to:											
1. Get familiar with the pre-clinical s	tudies in animals											
2. Know the animal handling techniq	ues, methods of drugs administration.											
3. Understand Dose calculation and a	dministration of drug through IM, IV routes											

- 4. Able to learn and understand CCSEA guidelines
- 5. Know about the various disease models in order to discover a new drug  $\square$



**CO 1.** Understanding pharmacology experiments demonstration by simulated experiments / videos.

**CO 2.** Understand knowledge of dose calculation and acute oral toxicity in pharmacology experiments

CO 3. Study various effects of drugs like anti-ulcer, GIT mobility and anti-allergic activity using various assay based on video recordings

CO 4. Know the biostatistics methods in experimental pharmacology like ANOVA, Chi square test, Wilcoxon Signed Rank test)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	3												3	
CO2		3												2
CO3						3								
CO4												3		
CO5														

BP609P	Herbal Drug Technology (Practical)	L	Т	Р	С
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Pharmacognosy & Phytochemistry – II (Practical)				
Co-requisites	Pharmacognosy & Phytochemistry				



								Course	Objectiv	es					
The cou	ırse will	enable t	he stude	nt-teach	er to:										
1.	Know t	o evalua	te the qu	ality of 1	raw mate	erial.									
2.	Know t	he guide	lines for	quality	of herba	l drug.									
3.	Know a	about her	bal cosn	netics, na	atural sw	veeteners	etc.								
4.	Know a	about mo	dern cor	ncepts su	ch as nu	traceutic	als								
							Co	urse Ou	tcomes	(CO)					
<b>CO 1.</b> (	Gain Pra	ctical kn	owledge	of Preli	minary p	ohytoche	mical sc	reening	of crude	drugs.					
י <u>ה</u> י נ	arry ou	t Prenar	ation and	standar	dization	of Herb	al extract	ts in cost	netic for	mulation.					
<i>.</i> 0 <i>2</i> . (	Jarry Ou	it Flepaia		stanuar	uization		ii exiiac			mulation.					
2 <b>0 3.</b> l	Understa	and & stu	idy the n	nonograj	ph of var	ious Her	bal drug	gs.							
C <b>O 4.</b> I	Determi	ne the co	ntent of	compon	ents like	Aldehvo	le and al	cohol							
				-											
C <b>O 5.</b> F	Prepare A	Ayurved	ic formu	lations											
							Prog	ramme a	nd Cou	rse Mappi	ing				
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1		PSO 2
CO1	3												3		
CO2						3								2	
<u> </u>									3						
CO3		1		1	1	1	1	1		1	1		1	1	
CO3	3														
CO3 CO4 CO5	3														



# Sem-VII

BP 701 T Instru	mental Methods Of Analysis (Theory)	L	Т	Р	С									
Version 2.0		3	1	0	4									
Total Contact Hours45 Hrs	3													
Pre-requisites/Exposure Analyt	tical Chemistry													
Co-requisites		-												
	Course Objecti	ves												
The course will enable the student-teacher to:														
1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis														
<ol> <li>Understand the chromatographic separation and analysis of drugs.</li> </ol>														
<ol> <li>Perform quantitative &amp; qualitative analysis of drugs using various analytical instruments.</li> </ol>														
	Course Outcomes (CO)													
CO2. This subject deals with the appli CO3. This subject is designed to impa CO4. This subject is designed to impa	ication of instrumental methods in qualitative ana ication of instrumental methods in quantitative an art a fundamental knowledge on the principles and art a fundamental knowledge on the principles and tical knowledge on modern analytical instruments	alysis of a l instrume l instrume	drugs. entation of spectros entation of chromat	ographic technique	·S.									



								Pro	gramm	e and Co	urse Maj	pping						
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO2	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO3	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO4	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO5	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
					1=lig	htly map	pped	2	= mode	rately map	oped	3=s	trongly m	apped				

BP 702 T	Industrial Pharmacy-II (Theory)	L	Т	Р	С									
Version 2.0		3	1	0	4									
<b>Total Contact Hours</b>	45 Hrs													
Pre-requisites/Exposure	Pharmaceutics													
Co-requisites -														
Course Objectives														
The course will enable the student-teacher to:														
1. Know the process of	pilot plant and scale up of pharmaceutical dosage forms													
2. Understand the proce	ess of technology transfer from lab scale to commercial b	atch												
3. Know different Laws	and Acts that regulate pharmaceutical industry													
4. Understand the approx	oval process and regulatory requirements for drug													
	Course Outcom	es (CO)												



**CO1:** This course is designed to impart fundamental knowledge on pharmaceutical product development.

**CO2:** This course is designed to impart knowledge on final product translation from laboratory to market.

**CO3:** This subject gives understanding and idea of various technologies applied to development of dosage forms from small scale to large scale.

**CO4:** This subject gives understanding and idea of Indian Regulatory Requirements.

**CO5:** This course imparts knowledge to quality management of pharmaceutical products.

								Pro	gramm	e and Co	urse Map	oping							
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6	
CO1	3	-	3	-	3	3	-	1	1	-	3	2	3	2	-	-	-	-	
CO2	3	-	3	-	3	3	-	1	1	-	3	2	3	2	-	-	-	-	
CO3	3	-	3	-	3	3	-	1	1	-	3	2	3	2	-	-	-	-	
CO4	3	-	3	-	3	3	-	1	1	-	3	2	3	2	-	-	-	-	
CO5	3	-	3	-	3	3	-	1	1	-	3	2	3	2	-	-	-	-	
		•	•		1=lig	htly ma	1=lightly mapped     2= moderately mapped												

BP 703T	Pharmacy Practice (Theory)	L	Т	Р	С									
Version 2.0		3	1	0	4									
<b>Total Contact Hours</b>	45 Hrs													
Pre-requisites/Exposure														
Co-requisites			-											
	Course Objectives													



The course will enable the student-teacher to:

- 1. Know various drug distribution methods in a hospital
- 2. Appreciate the pharmacy stores management and inventory control
- 3. Monitor drug therapy of patient through medication chart review and clinical review
- 4. Obtain medication history interview and counsel the patients
- 5. Identify drug related problems
- 6. Detect and assess adverse drug reactions
- 7. Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
- 8. Know pharmaceutical care services
- 9. Do patient counseling in community pharmacy.
- 10. Appreciate the concept of rational drug therapy.

**Course Outcomes (CO)** 

**CO1.** The course imparts knowledge of drug distribution in hospitals.

CO2. The course imparts knowledge of drug store management in Hospitals.

CO3. The course imparts knowledge of therapeutic drug monitoring for improved patient care.

**CO4.** The course imparts knowledge of dispensing of drugs and responding to minor ailments by providing suitable safe medications.

**CO5.** The course highlights the importance of patient counselling for improved patient care in the community

								Pro	gramm	e and Co	urse Map	oping						
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	3	-	3	3	-	2	-	-	-	3	3	1	-	-	-	-
CO2	3	-	3	-	3	3	-	2	-	-	-	3	3	1	-	-	-	-



CO3	3	-	3	-	3	3	-	2	-	-	-	3	3	1	-	-	-	-
CO4	3	-	3	-	3	3	-	2	-	-	-	3	3	1	-	-	-	-
CO5	3	-	3	-	3	3	-	2	-	-	-	3	3	1	-	-	-	-
					1=lig	htly maj	pped	2	= mode	rately map	oped	3=st	trongly ma	apped				

BP 704 T	Novel Drug Delivery System – Theory	L	Т	P	С
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites		-			
	Course O	bjectives			
The course will enable the st	udent-teacher to:				

1. To understand various approaches for development of novel drug delivery systems.

2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

Course Outcomes (CO)

**CO1:** This subject is designed to impart basic knowledge on the area of various conventional drug delivery systems.

**CO2:** The course imparts knowledge on sustained release drug delivery systems.

**CO3:** The course imparts knowledge on targeted drug delivery systems.

**CO4:** The course imparts knowledge on organ specific drug delivery systems.

**CO5:** The course imparts knowledge on newer drug delivery systems



	Programme and Course Mapping																	
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	3	-	3	3	-	2	-	-	2	3	3	1	-	-	-	-
CO2	3	2	3	-	3	3	-	2	-	-	2	3	3	1	-	-	-	-
CO3	3	2	3	-	3	3	-	2	-	-	2	3	3	1	-	-	-	-
CO4	3	2	3	-	3	3	-	2	-	-	2	3	3	1	-	-	-	-
CO5	3	2	3	-	3	3	-	2	-	-	2	3	3	1	-	-	-	-
	1=lightly mapped								= mode	rately map	ped	3=s	trongly ma	apped	•	•	•	•

BP 705 P	Instrumental Methods Of Analysis (Practical)	L	Т	Р	С										
Version 2.0		0	0	4	22										
Total Contact Hours	60 Hrs														
Pre-requisites/Exposure															
Co-requisites															
Course Objectives															
The course will enable the stu	udent-teacher to:														
1. Quantitative & Qualitat	tive Analysis of drugs using various analytical instrumen	ts.													
2. Demonstration of HPL	C instrument														
3. Separations of sugars and amino acids by chromatography.															
	Course Outcom	es (CO)													



**CO1.** This subject deals with the practical knowledge of application of instrumental methods in qualitative analysis of drugs.

**CO2.** This subject deals with the practical knowledge of application of instrumental methods in quantitative analysis of drugs.

**CO3.** This subject is designed to impart a practical knowledge on the principles and instrumentation of spectroscopic techniques.

**CO4.** This subject is designed to impart a practical knowledge on the principles and instrumentation of chromatographic techniques.

**CO5.** This also emphasizes on practical knowledge on modern analytical instruments that are used for drug testing.

	Programme and Course Mapping																	
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO2	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO3	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO4	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
CO5	3	-	2	-	3	3	-	1	-	-	3	2	3	2	-	-	-	-
	1=lightly mapped							2	= mode	rately map	oped	3=s	trongly ma	apped				

BP 706PS	Practice School	L	Т	Р	С
Version 2.0		12	0	0	6
Total Contact Hours	80 Hrs				
Pre-requisites/Exposure					
Co-requisites					



## **Semester-VIII**

BP80	1 <b>T</b>			Bio	ostatisit		Research I Theory	Aethodol	ogy-	L	,	Г	]	P		С	
Versi	on 2.0									<b>3</b>		1		<mark>0</mark>		<mark>4</mark>	
Total	Conta	ct Hou	rs	45 Hrs	S								1		1		
Pre-r	equisit	es/Exp	osure														
Co-re	equisite	s		Any a	nalytica	al Softw	are										
								Course	Objecti	ves							
The c	ourse w	ill enal	ble the	student	-teache	r to:											
CO2. CO3.	Know Appre To esta To und To kno	blish a blish a	formul formul of Par	tatistica al techn ation he ametric evel top	l techni iques in elping to c and No vics in s	iques to n solvin o predic on-Para tatistica	R and MIN solve statis <u>g the proble</u> et one varial metric mod l inference analyze the	tical prob ms. Course Ou le in term els for dev on testing	lems. <b>Itcomes</b> s of the veloping of statis	(CO) other that relevant tical hyp	at is, cor	relation ces on a	ssociated	l parame	ters	domized	tests
0.	To use	approp		xperme		Signs to	•	1			•						
								gramme	and Cou PO			PSO	PSO				
CO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7 PO</b>	8 PO9	10	PO11	PO12	1	2	PSO3	PSO4	PSO5	PSO6
CO1	2			2	2				1		2	2		1			1



CO2			2				2		2		2						
CO3	2			2	2							2	2				
<b>CO4</b>		2	2				2										
CO5																	
	1=lightly mapped						1	2= r	noderat	ely map	ped	3=	strongly	mapped	1		

BP 802 T	Social and Preventive Pharmacy (Theory)	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Pre-requisites/Exposure	Pharmacology				
Co-requisites	Remedial Biology				
	Course Objectiv	ves			
The course will enable the	student-teacher to:			1.4 1 .4	
1 0	ness/realization of current issues related to health and	d pharmaceu	itical problems	within the cour	ntry and
worldwide.	ness/realization of current issues related to health an hinking based on current healthcare development.	d pharmaceu	itical problems	within the cour	ntry and
worldwide.	hinking based on current healthcare development.	-	-		ntry and

**CO1.** The purpose of this course is to introduce to students number of health issues and their challenges.

**CO2.** Give information regarding Public health, preventive medicine, social medicine and community medicine their historical background. Giving information about the significance of food and its various components.



**CO3.**Tounderstand the various principles for the prevention and control of various diseases.

**CO4.** In this course introduced various National health programs like HIV, AIDS, TB, IDSP, NLCP, NMHP etc. and its objectives, functioning and their outcome

**CO5.** The roles of the pharmacist in the Community services in rural, urban and school health awareness program.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
<b>CO1</b>	2	2			2	2								2				
CO2			2				2		2		2							
CO3	2	2			2	2							2					
CO4		2	2				2											
CO5	2	2			2	2								2				
	1=lightly mapped							2= m	oderate	ely ma	pped	3=	strongl=	y mapp	ed			

BP 803 ET	Pharmaceutical Marketing Management (Theory)	L	Т	Р	С						
Version 2.0		3	1	0	4						
Total Contact Hours	45 Hrs										
Pre-requisites/Exposure	Pharmaceutical Marketing										
Co-requisites	Marketing										
Course Objectives											
The course will enable the student-teacher to:											



- 1. Understanding the marketing concepts and techniques and their applications in the pharmaceutical industry.
- 2. Explain the role of Industry competitive analysis, marketing mix and promotion strategy
- 3. To learn about price strategy, marketing distribution channel, sales distribution concepts in pharma marketing management
- 4. To learn and understand the principle and function of DPCO and NPPA authority for pharmaceutical product

**CO1.** In this topic is devoted the general questions of market concepts, including pharmaceutical, also understand the choice of physician and retail pharmacist.

**CO2.** To learn and understand the product line and product mix decisions, product life cycle stage, product portfolio analysis; product positioning, marketing mix and promotion mix strategy in companies.

CO3. To learn and understand the principle and function of DPCO and NPPA authority for better understanding essential commodities act.

**CO4.** The knowledge of theoretical based marketing pricing, prices classification, demand, supply and prices and establishment of the price for the goals.

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	2	2			2	2								2				
CO2	2	1	2			1	2		2		2							
CO3	2	2			2	2							2					
CO4		2	2				2											
CO5																		
	1=lightly mapped							2= m	oderate	ly maj	pped	3=	strongl	y mapp	ed	•		

BP 804 ET	Pharmaceutical Regulatory Science (Theory)	L	Т	Р	С
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	on 2.0										3	-	1	0		4	
Total	Contact I	Hours	45 Hr	8													
Pre-r	equisites/l	Exposure	Pharm	aceutic	cs												
Co-re	quisites		Regul	atory So	ciences												
							(	Course	Object	tives							
The co	ourse will	enable the	student-	teacher	to:				-								
1.	Know at	out the pro	ocess of	drug dis	scovery	and de	evelopn	nent									
2.	Know th	e regulator	y author	ities an	d ageno	cies gov	verning	the ma	nufact	ure and s	sale of pl	narmaceu	ıticals				
3.	Know th	e regulator	y approv	al proc	ess and	l their r	egistra	tion in I	ndian	and Inte	rnational	markets	5				
				-			Cor	ırse Ou	tcome	s (CO)							
		se is desigi lia.	ied to im	part the	e funda	mental	knowl	edge on	the O	rigin, de	velopme	nt, scop	e, objec	tives and	nature o	f Pharma	ceutical
legisla CO2.	ation in Ind A study	0	ory aspe	cts that	t affect			C			•						
legisla CO2. follow	ation in Ind A study ving Acts / Need Prod	dia. of regulate	ory aspe h latest a	cts that amendn	t affect nents)	t drug	produc	t desigr	ı, man	ufacture	e and dis	stributio	n in In	dia with	special	emphasis	s on the
legisla CO2. follow CO3.I (STPs CO4.	A study A study ving Acts / Need Prod	dia. of regulate Laws (with luct develo	ory aspe h latest a pment st	cts that amendn age doc	t affect nents) cumenta	t drug ation, fa	produc actory j	t desigr procedu	n, man res – S	ufacture	e and dis	stribution g procee	n in Ind dures (S	dia with SOPs) and	special l standar	emphasis d test Pro	on the
legisla CO2. follow CO3.I (STPs CO4. Japan, CO5.	A study A study ving Acts / Need Prod (3). Regulator , Australia It prepare	dia. of regulate Laws (with luct develo	bry aspe h latest a pment st nents for nts to lea	cts that amendn age doc	t affect nents) cumenta val of r	t drug ation, fa	produc actory j igs, and gulator	t desigr procedu d drug y require	n, man res – S produ ements	Standard Icts in res, docum	e and dis operatin egulated nentation	stribution og proced markets	n in Ind dures (S	dia with GOPs) and ia & othe	special l standar er countr	emphasis d test Pro ies like U	s on the ocedures US, EU,
legisla CO2. follow CO3.I (STPs CO4. Japan, CO5.	A study A study ving Acts / Need Prod (3). Regulator , Australia It prepare	dia. of regulate Laws (with uct develo ty requiren , UK etc. s the stude	bry aspe h latest a pment st nents for nts to lea	cts that amendn age doc	t affect nents) cumenta val of r	t drug ation, fa	produc actory j igs, and gulator	t desigr procedu d drug y require	n, man res – S produ ements	Standard acts in re	e and dis operatin egulated nentation	stribution og proced markets	n in Ind dures (S	dia with GOPs) and ia & othe	special l standar er countr	emphasis d test Pro ies like U	s on the ocedures US, EU,



CO1	2	2		1	2	2		2		2			2	2			
CO2	2	1	2			1	2		2		2						
CO3	2	2		2	2	2				2			2				
<b>CO4</b>			2	2		2	2	2				2					
CO5		2	2		2	2	2				2			2			
				1=l	lightly 1	napped		2= n	noderate	ely ma	pped	3:	=strong	ly mapp	bed		

BP805ET	Pharmac	ovigilance (Theory)	L	Т	Р	С
Version 2.0			3	1	0	4
Total Contact Ho	urs	45 Hrs				
Pre-requisites/Ex	posure	Toxicology study				
Co-requisites		ADR				
		Course Objectives				
<ol> <li>3. National and int</li> <li>4. Dictionaries, co</li> </ol>	monitoring elopment o ernational s ding and ter					
		Course Outcomes (C	0)			



**CO1.**International standards for classification of diseases and drugs

CO 2. Adverse drug reaction reporting systems and communication in pharmacovigilance

CO 3. Methods to generate safety data during pre-clinical, clinical and post approval phases of drugs' life cycle

**CO 4.** Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation

CO 5. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India

	Programme and Course Mapping																	
СО	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CO1	2	2		1	2	2		2		2			2	2				
CO2	2	1	2			1	2		2		2							
CO3	2	2		2	2	2				2			2					
CO4	2	2		2	2	2				2			2					
CO5	2	3	2	2	2	2	1			2			2					
				1=lig	htly ma	apped		2= m	oderate	ly map	oped	3=5	strongly	mappe	d			

BP 806 ET	Quality Control And Standardization Of Herbals (Theory)	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Pre-	Herbal Drug Technology				



requisites/Exposure       Co-requisites       Pharmacognosy & Phytochemistry																
Co-ree	quisite	s	Pharmac	ognosy	v & Phy	tochen	nistry									
								Course	Objec	tives						
The co	ourse w	ill enable the	student-te	eacher	to:											
1. K	<ol> <li>Know WHO guidelines for quality control of herbal drugs</li> <li>Know Quality assurence in herbal drug industry.</li> </ol>															
2. Know Quality assurance in herbal drug industry																
3. Know the regulatory approval process and their registration in Indian and international markets																
4. Appreciate EU and ICH guidelines for quality control of herbal drugs																
							Co	urse O	utcom	es (CO	<b>C</b> )					
CO2. follow CO3. D CO4. drugs.	The su ring gui Knowle Knowle	ntent, Ash Va bject also pr ide line cGM edge about th edge about th tory requiren	ovides an P, GAP ar e Quality he stability	opport ad GLP control y testin	unity f in trac of foll g of he	for the litional owing g erbal m	student system guidelin edicine medicin	to lean of me ne like es and a ne as po	rn the dicines EU and applica er WH(	qualit I ICH tion o O guid	y assura guidelir f variou le lines.	nce of c nes. s chrom	crude d	rugs in	·	
			-				Progr	amme	and C	ourse	Mappi	ng			-	
со																
CO1	CO1         2         2         1         2															
CO2	2	1	2			1	2		2		2			2		
CO3	2	2		2	2	2				2			2			



CO4	2	1	2		1	2		2		2		1			
CO5	2	1	2		1	2		2		2		2	2		
			1=1	lightly map	oped	2=	moderate	ly map	pped		3=stro	ongly m	apped		



BP 807 ET	Computer aided drug design	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 808 ET	Cell and molecular biology	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 809 ET	Cosmetic science	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					



BP 810 ET	Experimental Pharmacology	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 811 ET	Advanced instrumentation techniques	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 812 ET	Dietary supplements and neutraceuticals	L	Т	Р	С
Version 2.0		3	1	0	4
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					



BP 813 PW	Project work	L	Т	Р	С
Version 2.0		0	0	12	6
<b>Total Contact Hours</b>	45 Hrs				
Herbal Drug Technology					
Co-requisites					

## Mapping with components of Global/National/Regional/Local aspects, employability, skill development, SDG, NEP-20 etc.

Tregional and global	Entreprene Ship/		jender, Human ster-I			
Relevance to the local, national, r developmental needs	Relevance To the Employability/	Skill Development	Relevance to the Professional Eth Values, Environment & Sustainab	SDG	NEP	POE/4 <sup>th</sup> IR



BP101T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I		-	-		-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG3:Ensurehealthylivesandpromotewell-beingfor all at allages.SDG4.4:SkillsforDecentWork	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



Unit II	_	-	-	-	_	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP 9.3)	(9.1-	Student centric Technical Skills that match Industry Needs
Unit III	-	-	-	-	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP 9.3)	(9.1-	Student centric Technical Skills that match Industry Needs



Unit IV	-	-	-	-	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG3:Ensurehealthylivesandpromotewell-beingfor all at allages.SDG4.4:SkillsforDecentWork	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs
Unit V	-	-	-	-	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	Gender Based knowledge will benefit the students to respect and understand the other gender in a better way	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP 21.1- 21.10: Adult Education and Lifelong Learning	Student centric Technical Skills that match Industry Needs



BP1 02T	Unit
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	
Skill Development	
Professional Ethics	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability
Gender	
Human Values	
Environment & Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit	Empowerme	Skilled professionals in	National	-	-	-	Understand	-	-	-	-	1.b		Updated
Ι	nt of Local	pharmaceutical analysis	Drug Quality				ing the					Crea		Curricul
	Workforce:	can contribute to the	and Safety:				principles					te		um
	Developing	development and	Skilled				and					soun		
	skills in	growth of the regional	professionals				application					d		
	pharmaceuti	pharmaceutical industry	in				s of these					polic		
	cal analysis		pharmaceutic				techniques					y		
	at the local		al analysis				helps					fram		
	level		play a vital				develop					ewor		
	empowers		role in				expertise in					ks		
	the		ensuring the				selecting					(SD		
	workforce		quality,				and					G		
	within the		safety, and				applying					1a)		
	community.		efficacy of				the							
			pharmaceutic				appropriate							
			al products				analytical							
							method for							
							different							
							pharmaceut							
							ical							
							compounds							
							•							
Unit	Local	National Drug Quality	Regulatory	Capacit	-	-	Laboratory	-	-	-	-	Ensu	Qual	Internsh
II	Analytical	and Safety: Skilled	Compliance:	У			Techniques					re	ity	ip
	Services and	professionals in	National	Buildin			: The					healt	Uni	Program
	Consulting:	pharmaceutical analysis	regulatory	g and			paragraph					hy	versi	S
	Skilled	play a vital role in	bodies	Knowle			mentions					lives	ties	
	professional	ensuring the quality,	responsible	dge			specific					and	and	
	s in	safety, and efficacy of		Transfe			laboratory					pro	Coll	
	pharmaceuti	pharmaceutical products	approval and	r:			techniques					mote	eges	
	cal analysis	circulating in the	oversight can	Sharing			associated					well	: A	
	can offer	country.	benefit from	knowle			with each					-	New	
	analytical		expertise in	dge and			method,					bein	and	



	services and		pharmaceutic	buildin			such as the					a for	For	
			*									g for		
	consulting		al analysis.	g .,			constructio					all at	war	
	to local			capacit			n and					all	d-	
	pharmaceuti			y in			working of					ages	look	
	cal .			pharma			electrodes,					(SD	ing	
	companies,			ceutical			preparation					G 3)	Visi	
	healthcare			analysis			of standard						on	
	institutions,			globally			solutions,						for	
	and research			enhance			and						Indi	
	organization			s the			handling of						a's	
	<b>S.</b>			capabili			precipitates						Hig	
				ties of									her	
				develop									Edu	
				ing									catio	
				countrie									n	
				S									Syst	
													em	
													(9.1-	
													9.3)	
Unit	Their	Public Health and	Pharmaceutic	Global	-	-	Laboratory	-	-	-	-	Skill	Opti	Internati
III	expertise	Patient Safety: Skilled	al Industry	Collabo			Techniques					s for	mal	onal
	enhances	professionals in	Competitiven	rations			: The					Dec	Lear	Exchan
	local	pharmaceutical analysis	ess: A strong	and			paragraph					ent	ning	ge
	research	play a crucial role in	foundation in	Partners			mentions					Wor	Envi	Student
	capabilities	ensuring the quality,	pharmaceutic	hips:			specific					k	ron	Program
	and supports	safety, and efficacy of	al analysis at	Global			laboratory					(SD	men	s
	the	pharmaceutical products	the national	expertis			techniques					G	ts	5
	developmen	available in the country.	level can	e in			associated					4.4)	and	
	t of new	a value of in the could y.	enhance the	pharma			with each					,	Sup	
	pharmaceuti		competitivene	ceutical			method,						port	
	cal products		ss of the	analysis			such as the						for	
	car products		ss of the	anarysis			such as the						101	



	and		domestic	facilitat			constructio						Stud	
	technologies		pharmaceutic	es			n and						ents	
	teennoiogies		al industry.	collabor			working of						(12.	
			ai muusu y.	ations			electrodes,						1-	
				and			preparation						12.1	
							of standard						12.1 0)	
				partners hips			solutions,						0)	
				betwee			and							
				n			handling of							
				countrie			precipitates							
				s, 1										
				academ										
				ic										
				instituti										
				ons,										
				and										
				pharma										
				ceutical										
				compan										
				ies										
Unit	Empowerme	Quality Control and	Research and	Internat	-	-	Method	-	-	-	-	Safe	Equi	Skill
IV	nt of Local	Assurance: Skilled	Development:	ional			Selection					and	ty	Develop
	Workforce:	professionals in	National	Trade			and					Incl	and	ment
	Developing	pharmaceutical analysis	research	and			Optimizatio					usiv	Incl	
	skills in	are crucial for	institutions	Regulat			n: The					e	usio	
	pharmaceuti	establishing and	and	ion			paragraph					Lear	n in	
	cal analysis	maintaining quality	universities	Compli			introduces					ning	Hig	
	at the local	control and assurance	focusing on	ance:			different					Envi	her	
	level	systems.	pharmaceutic	Global			methods					ron	Edu	
	empowers		al sciences	expertis			and					ment	catio	
	the		can benefit	e in			techniques					s	n	
	workforce		from	pharma			used in					(SD	(14.	
	within the		expertise in	ceutical			analytical					G	1-	



	community.		pharmaceutic	analysis			chemistry,					4.a)	14.4	
	community.		1	•			•					4.a)	.2)	
			al analysis	promot			providing						.2)	
				es			individuals							
				internat			with a							
				ional			broad							
				trade			understandi							
				and			ng of the							
				regulato			available							
				ry			options for							
				complia			analysis.							
				nce										
Unit	Contribution	Deculatory Comuliants	Dhomponerici	Intornat			Data					Decf	Ecri	Honda
		Regulatory Compliance:	Pharmacovigi	Internat	-	-		-	-	-	-	Prof	Equi	Hands-
v	to Local	National regulatory	lance and	ional			Interpretati					essio	ty	on E
	Research	authorities responsible	Post-	Trade			on:					nal	and	Experie
	and	for overseeing the	Marketing	and			Analytical					Dev	Incl	nce
	Innovation:	pharmaceutical industry	Surveillance:	Regulat			chemistry					elop	usio	
	Skilled	rely on professionals in	Skilled	ion:			involves					ment	n in	
	professional	pharmaceutical analysis	professionals	Knowle			the					of	Hig	
	s in	to enforce regulatory	in	dge and			interpretati					Teac	her	
	pharmaceuti	standards and ensure	pharmaceutic	skills in			on of					hers	Edu	
	cal analysis	compliance	al analysis	pharma			experiment					(SD	catio	
	at the local		can contribute	ceutical			al data and					G	n	
	level can		to national	analysis			drawing					4.c)	(14.	
	contribute to		pharmacovigi	facilitat			conclusions						1-	
	research and		lance efforts.	e			based on						14.4	
	innovation			internat			the results						.2)	
	initiatives			ional			obtained.							
	within the			trade in										
	community.			pharma										
	5			ceutical										
				product										
				s.										



Unit	Relevance to the local, national, regional and global developmental needs	e To the Employability/ neurship/ Skill Development	ce to the Professional Ethics, Gender, Values, Environment & Sustainability			×
	Relevance to 1 global developi	Relevance To Entrepreneurship/ Skill	Relevance to 1 Human Values	SDG	NEP	POE/4 <sup>th</sup> IR



BP1 03T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	It allows pharmacists	This enhances their ability to	Provides pharmacists		It equips professionals							Skills for	Professional Education	Focus on Employabi
	to provide culturally	provide patient-	with a solid foundation in		with the							Decent Work	(17.1-17.5)	lity Skills (Local/Reg
	sensitive	centered care, collaborate with	the evolution of		necessary skills and							(SDG		ional and
	care, comply	healthcare	their field,		knowledge to							4.4)		Global)
	with local	stakeholders,	enhances their		contribute to									
	regulations, address local	and contribute to the overall	professional identity, and		the advancement									
	healthcare	health and well-	equips them		of pharmacy									
	needs, and	being of the	with the		and improve									
	actively	local population	knowledge and skills necessary		patient care.									
	engage with the local		for safe and											
	community		effective											
	to improve		pharmaceutical											
	healthcare outcomes.		practice.											
	outcomes.													



Unit	 	 Promote	Enhances	 	 	 	Skills	Professional	Focus on
II		harmonizati	employability				for	Education	Employabi
		on of	in various				Decent	(17.1-17.5)	lity Skills
		pharmaceuti	sectors of the				Work		(Local/Reg
		cal practices,	pharmaceutic				(SDG		ional and
		improve	al industry,				4.4)		Global)
		patient	including						
		outcomes on	manufacturin						
		a global	g, quality						
		scale, and	control,						
		advance the	research and						
		development	development,						
		and	regulatory						
		accessibility	affairs,						
		of	education,						
		medications	and						
		worldwide.	consultancy.						
			It provides a						
			competitive						
			edge and						
			opens up						
			opportunities						
			for career						
			advancement						
			and						
			specialization						
			in the global						
			pharmaceutic						
			al landscape.						



Unit			 This	Various	 					Skills	Professional	Focus on
III			knowledge	sectors of the						for	Education	Employabi
			facilitates	pharmaceutic						Decent	(17.1-17.5)	lity Skills
			the selection	al industry,						Work	()	(Local/Reg
			of	including						(SDG		ional and
			appropriate	formulation						4.4)		Global)
			excipients,	development,								/
			manufacturi	quality								
			ng	control,								
			processes,	manufacturin								
			and quality	g, regulatory								
			control	affairs,								
			measures to	research and								
			meet	development								
			regulatory	and pharmacy								
			requirements	practice.								
			and deliver									
			safe and									
			efficacious									
			pharmaceuti									
			cal products									
			to patients.									
Unit			 Helps in	Various	 					Skills	Professional	Focus on
IV			optimizing	sectors of the						for	Education	Employabi
1 4			drug	pharmaceutic						Decent	(17.1-17.5)	lity Skills
			delivery,	al industry,						Work	(17.1 17.5)	(Local/Reg
			formulation	including						(SDG		ional and
			stability,	formulation						(500)		Global)
			patient	and						,		(100 <b>u</b> )
			compliance,	development,								
			and ensuring	quality								
			the safety	control,								
			and efficacy	regulatory								
l	l	1	and enfoucy		I	L	I	L	1	I	L	



		of pharmaceuti cal products	affairs, research and development, clinical practice, and pharmaceutic al education and training.						
Unit v	 	 It provides experts with the knowledge and abilities required to create stable and effective semisolid dosage forms for a range of therapeutic purposes.	Opens up diverse career opportunities in formulation development, quality control, research and development, regulatory affairs, manufacturin g, dermatology, cosmetics, academia, and research institutions within the pharmaceutic al industry.	 	 	 	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Focus on Employabi lity Skills (Local/Reg ional and Global)



BP104T	Unit
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	
Skill Development	
Professional Ethics	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability
Gender	
Human Values	
Environment & Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit I	-	-	Impurities in pharmaceutic al substances: History of Pharmacopoe ia, Sources and types of impurities	Impuriti es in pharma ceutical substan ces: History of Pharma copoeia , Sources and types of impuriti es	Deter minat ion of impur ities In phar maco poeial subst ance gener ate empl oyme nt.	-	Determinati on of impurities In pharmacop oeial substance. Which develop skills	-	_	_	-	Skill for dece nt wor k SDG 4.4.	Prof essi onal Edu catio n (17. 1- 17.5 )	It helps in developi ng technica 1 skills that industry requires .And thus helps in creating employ ment.
Unit II	-	-	Acids, Bases and Buffers 2.Major extra and intracellular electrolytes 3. Dental products	Acids, Bases and Buffers 2.Major extra and intracell ular electrol ytes 3. Dental product s	Produ ction of acid base, Electr olyte soluti on, dentif rices the globe provi des a lot of empl	Produc tion of acid base, Electro lyte solutio n, dentifri ces the globe provid es a lot of employ ment.			-	-		Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Skill Develop ment It helps in developi ng technica 1 skills that industry requires .And thus helps in creating



Unit III	_	_	Synthesis,	Synthes	oyme nt. Synth	-	Synthesis	_	_	_	Skill	Prof	employ ment Skill
			reactions and medicinal uses of following compounds/d erivatives Gastric acidifiers, antacid and and cathartics	is, reaction s and medicin al uses of followi ng compou nds/deri vatives Gastric acidifie rs, antacid and and catharti cs	synth esis, reacti ons and medic inal uses of follo wing comp ounds /deriv atives Gastri c acidif iers, antaci d and and cathar tics	-	of HCl, Magnesium sulphate, Sodium hydrogen carbonate, combined antacid preparation helps in honing the technical skill and expertise in production				s for Dec ent Wor k (SD G 4.4)	essi onal Edu catio n (17. 1- 17.5 )	Develop ment It helps in developi ng technica I skills that industry requires .And thus helps in creating employ ment



Unit IV	-	-	Synthesis,	Synthes	Synth	-	Synthesis	-	-	-	Skill	Prof	Skill
			reactions and	is,	esis,		of				s for	essi	Develop
			medicinal	reaction	reacti		Haemitinic				Dec	onal	ment
			uses of		ons		s, Anti				ent	Edu	Te halma
			following	medicin	and		dotes,				Wor	catio	It helps
			compounds/d	al uses	medic		expectorant				k	n	in davalani
			erivatives	of	inal		S				(SD	(17.	developi
			Expectrorants	followi	uses		preparation				G	1-	ng technica
			, emetics,	ng	of		helps in				4.4)	17.5	l skills
			antidotes,	compou	follo		honing the					)	that
			Haemitinics	nds/deri	wing		technical						industry
			Themenes	vatives	comp		skill and						requires
				Expectr	ounds		expertise in						and thus
				orants,	/deriv		production						helps in
				emetics,	atives								creating
				antidote	Expe								employ
				s,	ctrora								ment
				Haemiti	nts,								
				nics	emeti								
					cs,								
					antid								
					otes,								
					Haem								
					itinics								
					globe								
					provi								
					des a								
					lot of								
					empl								
					oyme								
					nt.								



Unit v	-	-	Radiopharma	Radiop	Radio	-	-	 -	-	Skill	Prof	Skill
			ceuticals	harmac	phar					s for	essi	Develop
				euticals	mace					Dec	onal	ment
				Product ions	utical s					ent Wor k (SD G 4.4)	Edu catio n (17. 1- 17.5 )	It helps in developi ng technica 1 skills that industry requires and thus helps in creating
												employ ment
												•

Unit	the lobal, lobal eeds	the nt	the thics, ment ment	
	to natio ntal no g	To lity/ eurshi opme	to HL viron bility	
	ance ppme	ance yabi prend Jevel	ance ssions er, s, En itaina	4 <sup>th</sup> IR
	Relevi local, region develo	Releva Emplo Entrej Skill I	Profev Profev Gende & Sus & Sus	



I & g II & students about commu nication skill	tuneImage: second s
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Unit III	-	-	-	Globall y aware students about listenin g skills and writing emails	-	Knowledge of writing emails and listening will help students in expression their views/comm unicating through writing	-	-	-	-	Tech nolo gy Use & Integ ratio n (23.1 - 23.13 )	Focus on Emplo yabilit y Skills (Local/ Region al and Global )	Skill Develo pment
Unit IV	-	-	-	Fulfils the need for intervie w skills	-	Knowledge of interview skills will help in building confidence to face interview	-	-	-	-	Skill s for Dece nt Wor k (SD G 4.4)	Focus on Emplo yabilit y Skills (Local/ Region al and Global )	Skill Develo pment
Unit v	-	-	-	Globall y aware about commu nication skills used in	-	Knowledge of group methods ,their do's and dont's will help in facing	-	-	-	-	Tech nolo gy Use & Integ ratio	Focus on Emplo yabilit y Skills (Local/ Region	Emplo yabilit y, Skill Develo pment



		group		interview			n	al and	
		discussi	:	rounds			(23.1	Global	
		on					-	)	
							23.13		
							)		

Unit	Relevance developmen			al, regional and gl	lobal	Entre	ance oyability/ preneurshi opment	To the ip/ Skill	Prof Gen Envi	vance čessional der, Huma ironment ainability		the Ethics, Values, &	SDG	NE P	POE/4 <sup>th</sup> IR
BP10 6 RBT	Local	<b>Regio</b> nal	National	Global		Em ploy abil ity	Entrepr eneursh ip	Skill Developme nt	Pr ofe ssi on al Et hic s	Gender	H u an V al ue s	Envi ron ment & Sust aina bility			



Unit I		Student will be able to	Remedial	Remedi	(SD	(9.1	Global
		understand importance of	Biology	al	G	-	Education
		the living world on a	Remedial	Biology	4.4)	9.3)	Knowledg
		global scale allows for	Biology	provides			e, Skill
		informed decision-making	provides a	a			Developm
		and actions aimed at	strong	foundati			ent,
		promoting the coexistence	foundation	onal			Employabi
		of humans and nature	for various	understa			lity
		while preserving the	careers and	nding of			-
		planet's ecological	areas	the			
		integrity.	related to	human			
			health,	body,			
			fitness, and	includin			
			medical	g its			
			sciences.	structure			
			The	s and			
			knowledge	function			
			gained can	for both			
			enhance	gender			
Unit II		Student will be able to	critical		(SD	(9.1	Global
	-	know Body fluids and	thinking,		G (SD	(9.1	Education
		3	problem-		4.4)	- 9.3)	
			solving		4.4)	9.5)	Knowledg e, Skill
		digestion and absorption,	skills, and				,
		have broad implications for	the ability				Developm
		global water resources,	to apply				ent, Employet
		nutrient cycling,	scientific				Employabi
		agricultural practices, food	principles				lity
		security, and waste	to practical				
		management. By	situations,				
		understanding and	contributin				
		managing these processes	g to skill				
		sustainably, we can	developme				
		contribute to a more			I		



	balanced and environmentally conscious global system.	nt in these fields.				
Unit III	Knowledge of respiratory mechanisms, urinary system functions, endocrine system basics, and reproductive system disorders, students can play a significant role in analysing, addressing, and finding solutions to global issues related to respiratory disorders, urinary disorders, endocrine disorders like diabetes, and reproductive system- related disorders.			(SD G 4.4)	(9.1 - 9.3)	Global Education Knowledg e, Skill Developm ent, Employabi lity
Unit IV	 By understanding and managing the mineral nutrition of plants, we can enhance these global impacts and promote a sustainable and thriving planet.			(SD G 4.4)	(9.1 - 9.3)	Global Education Knowledg e, Skill Developm ent, Employabi lity
Unit v	Understanding and harnessing the potential of these processes is essential for addressing global challenges and promoting a			(SD G 4.4)	(9.1 - 9.3)	Global Education Knowledg e, Skill Developm

Unit	Relevance to the local, national, regional and global developmental needs	K.R. MANGAL	Relevance To Ane Employability/ A Entrepreneurship/AA Skill Developmenta	Relevance to the Professional Ethics, Gender, Human	Values, Environment & Sustainability	SDG	NEP	POE/4 <sup>th</sup> IR	
		susta	inable future.						ent, Employabi lity



BP107P Unit I Practical	Local	<sup>-</sup> Regional	The concepts	' Global	<sup>-</sup> Employability	Entrepreneurship	turner Skill Development Enrichment of thinking	Professional Ethics	- Gender	Human Values	Environment & Sustainability	SDG 3: Ensure	NEP (9.1-	Student centric
1-3			once imbibed will help the students to use the practical information in providing better health services to the nation as a whole				of timiking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and					healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	9.3)	Technical Skills that match Industry Needs



							they will be able to correlate the knowledge and information gathered in their day- to-day life and future job prospective also							
Unit II Practical 4-6	-	-	The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole	-	-	-	Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and	-	-	-	-	SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



							they will be able to correlate the knowledge and information gathered in their day- to-day life and future job prospective also							
Unit III Practical 7-9	-	-	The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole	-	-	-	Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and	-	-	-	-	SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



							they will be able to correlate the knowledge and information gathered in their day- to-day life and future job prospective also							
Unit IV Practical	-	-	The concepts	-	-	-	Enrichment of thinking	-	The practical knowledge of	-	-	SDG 3: Ensure	NEP (9.1-	Student centric
10-12			once imbibed will help the students to use the practical information in providing better health services to the nation as a whole				ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and		the contraceptive methods and related topics will enrich the knowledge of the students in the field			healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	9.3)	Technical Skills that match Industry Needs



							they will be able to correlate the knowledge and information gathered in their day- to-day life and future job prospective also							
Unit V Practical	-	-	The concepts	-	-	-	Enrichment of thinking	-	The practical knowledge of	-	-	SDG 3: Ensure	NEP (9.1-	Student centric
13-16			once imbibed will help the students to use the practical information in providing better health services to the nation as a whole				ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and		the contraceptive methods and related topics will enrich the knowledge of the students in the field			healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	9.3)	Technical Skills that match Industry Needs



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BP1											જ			
08P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment Sustainability			
Unit I	-	-	To Perform Quality control of marketed formulations	To analyse the impurit y in API by limit test	<b>1</b>	<u> </u>	Analysis of impurities helps in quality control of Drugs	-	-	<b>H</b>	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro mot ing Hig h- qua lity rese arc h (18. 1- 18. 9),	Skill Develop ment, Employ ability
Unit II	-	-	To Perform the standardizatio n of different solutions for further synthesis use and analysis	To determi ne the concent ration of solution	-	-	Standardiza tion of solution will help in assay of Drugs	-	-	-	-	Skill s for Dec ent Wor k (SD G	Pro mot ing Hig h- qua lity rese arc	Skill Develop ment, Employ ability



Linit			To Perform	То			Account			4.4)	h (18. 1- 18. 9), Tec	Skill
Unit III	-	-	Quality control of marketed formulations	analyse the import sample by followi ng differen t assay method s	-	-	Assay of Drugs helps in Quality control of Drugs			s for Dec ent Wor k (SD G 4.4)	hni cal Skil ls that mat ch Ind ustr y Nee ds	Develop ment, Employ ability
Unit IV	-	-	To determine the normality of drugs during quality check of product	To determi ne the concent ration of solution	-	-	Standardiza tion of solution will help in assay of Drugs		-	Skill s for Dec ent Wor k (SD G 4.4)	Tec hni cal Skil ls that mat ch Ind ustr y Nee ds	Hands- on Experie nce



Unit BP 109P	Relevance to the local, national,	regional and global developmental needs			Relevance To the Employability/	Entrepreneurship/ Skill Development		t	Professional Ethics, Gender Human	Envir	& Sustainability	SDG	NEP	POE/4 <sup>th</sup> IR
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Syrups and elixirs contribute globally by offering a palatable and easily administered liquid dosage form, ensuring widespread accessibility to medications, particularly for children and individuals with swallowing difficulties. They enhance patient compliance and contribute to improved global healthcare outcomes.	-	Syrups and elixirs contribute to entrepreneurship by providing opportunities for formulation innovation and niche market creation in the pharmaceutical industry. Entrepreneurs can leverage these liquid dosage forms to develop unique and specialized medication	-	-	-	-	-	Ski lls for Dec ent Wo rk (SD G	Pro moti ng Hig hj- qual ity rese arch (18.	Focus on Employ ability Skills (Local/ Region al and Global)



Unit II	_	_	-	Linctus and solutions contribute globally by offering convenient and precise delivery of medications, improving patient compliance and access to treatment. They play a crucial role in global healthcare, particularly in the management of respiratory conditions, cough, and other ailments.	-	solutions, catering to specific patient needs and establishing their own successful ventures. Linctus and solutions provide entrepreneurial opportunities by enabling the development of unique formulations and specialized products for specific market segments. Entrepreneurs can capitalize on these liquid medication options to address specific patient	-	-	-	-	-	4.4) Ski lls for Dec ent Wo rk (SD G 4.4)	1- 18.9 ) Pro moti ng Hig hj- qual ity rese arch (18.	Focus on Employ ability Skills (Local/ Region al and Global)
						needs and create innovative solutions, establishing successful ventures in the pharmaceutical industry							1- 18.9 )	
Unit III	_	-	-	Suspensions and emulsions contribute globally by providing versatile formulations for the delivery of poorly soluble drugs, enhancing their bioavailability and therapeutic effectiveness. They offer diverse applications in pharmaceuticals, food, and cosmetic industries, driving innovation and improving global access to effective medications and consumer products.	-	Suspensions and emulsions offer entrepreneurial opportunities by enabling the development of unique formulations and product lines, catering to specific market needs. Entrepreneurs can leverage these versatile dosage forms to create innovative solutions, establish niche brands, and tap into the growing demand for specialized suspensions and emulsion-based	-	-	-	-	-	Ski lls for Dec ent Wo rk (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Region al and Global)



Unit IV	-	-	-	Powders and granules, suppositories,	_	products. Powders and granules,	-	-	-	-	-	Ski	Pro	Focus
				gargles, and mouthwashes contribute globally by offering versatile and accessible dosage forms for medication administration, providing convenience, targeted treatment, and improved patient outcomes in diverse healthcare settings worldwide. They address specific needs such as ease of administration, localized therapy, and oral hygiene, contributing to global healthcare accessibility and improved quality of life.		suppositories, gargles, and mouthwashes offer entrepreneurial opportunities through the development of specialized formulations and niche product lines. Entrepreneurs can leverage these unique dosage forms to create innovative healthcare products, cater to specific market segments, and establish successful ventures in the pharmaceutical and personal care industries.						lls for Dec ent Wo rk (SD G 4.4)	moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	on Employ ability Skills (Local/ Region al and Global)
Unit v	-	-	-	Suppositories, semisolids, gargles, and mouthwashes have global significance as they play crucial roles in healthcare by delivering medications rectally, providing topical treatments for various skin conditions, and promoting oral hygiene, respectively, thereby improving patient outcomes and enhancing overall well- being.	-	Entrepreneurs may explore the development and manufacturing of innovative suppository formulations, semisolid products, or oral hygiene solutions, aiming to address unmet needs, improve existing formulations, or introduce novel approaches to medication delivery and personal care. By leveraging	-	-	-	-	-	Ski lls for Dec ent Wo rk (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9	Focus on Employ ability Skills (Local/ Region al and Global)



	their knowledge of these			)	
	healthcare products,				
	entrepreneurs can create				
	businesses that contribute to				
	the advancement of medical				
	treatments, patient care, and				
	overall wellness.				

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BP 110P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment &			
Unit			Limit tests for following ions Chloride, Sulphate, Iron, Arsenic	Limit tests for following ions Chloride, Sulphate, Iron, Arsenic			Limit test helps to meet industry demand in production of pure API				D r u g s s h o u l d b e m i n i m u m o f	Skills for Decent Work (SDG 4.4), Ensure sustainable consumption and production patterns (SDG 12)	Technical Skills that match Industry Needs	Employ ability



Unit II	-	Identificati on test Magnesium hydroxide Ferrous sulphate Sodium bicarbonate Calcium gluconate Copper sulphate	Identificati on test Magnesium hydroxide Ferrous sulphate Sodium bicarbonate Calcium gluconate Copper sulphate	-	-	Identification test helps to meet industry demand in production of pure API	-	-	-	i m p u ri t y -	Skills for Decent Work (SDG 4.4)	Practical Courses from Industry/Alumni	Skill Develop ment, Employ ability
Unit III	-	Test for purity Swelling power of Bentonite	Test for purity Swelling power of Bentonite	-	-	Determination of physicochemical properties of Drugs assist in Preformulation studies	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High- quality research (18.1-18.9), Practical Courses from Industry/Alumni	Skill Develop ment, Employ ability



	Neutralizi g capaci of aluminum hydroxide gel	ty g capacity of aluminum						
Unit IV	Preparatio of inorganic pharmace icals Boric acid Potash alum	of inorganic				Skills for Decent Work (SDG 4.4)	Promoting High- quality research (18.1-18.9), Practical Courses from Industry/Alumni	Skill Develop ment, Employ ability



Unit	Relevance to the local, national, regional and global developmental needs	ce To the Employability/ eneurship/ Skill Development	ce to the Professional Ethics, Gender, Values, Environment & Sustainability			IR
	Relevance to global develo <sub>l</sub>	Relevance To Entrepreneurship/	Relevance to Human Value	SDG	NEP	POE/4 <sup>th</sup> IR



BP111 P		7	-1		ability	Entrepreneurship	Skill Development	Professional Ethics		Human Values	Environment & Sustainability			
Unit I	This course is	This course is	This course is	Global This	<b>Employability</b> meant	Eutrepr meant	<b>Perfecti</b>	brofessi A	Gender	Human	Environ	1.a	-	Technic
C III I	designed to	designed to give	designed to	course is	to	to	ve	<i>y</i> es				Ensu		al Skills
	give basic	basic	give basic	designed	teach	teach	Comm					re		that
	communicatio	communication	communication	to give	effecti	effecti	unicati					signi		match
	n skills with a	skills with a focus	skills with a	basic .	ve	ve	on					fican		Industry
	focus on local	on regional relevance and	focus on national	communi cation	comm	comm unicati	/Writin					t mah		&osulta
	relevance and developmental	relevance and developmental	relevance and	skills with	unicati on	on	g Skills					mob ilizat		ncy Needs/S
	needs.	needs.	developmental	a focus on	skills,	skills,	/Effecti					ion		oft
	needs	needs	needs.	global	which	which	ve					of		Skills/S
				relevance	are	are	Writin					reso		kill
				and	essenti	essenti	g					urce		Develop
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Unit II	This course is	This course is	This course is	This	meant	meant	Etiquet te Present ation Skills, Effecti	yes	_	_	_	1.a	_	Technic
	designed to teach Pronunciation, a fundamental communicatio n skill with local relevance and developmental requirements.	designed to teach Pronunciation, a fundamental communication skill with regional relevance and developmental requirements.	designed to teach Pronunciation, a fundamental communication skill with national relevance and developmental requirements.	course is designed to teach Pronuncia tion, a fundamen tal communi cation skill with global relevance and developm ental requireme nts.	to teach effecti ve comm unicati on skills, which are essenti al for emplo yment.	to teach effecti ve comm unicati on skills, which are essenti al for Entrep reneur ship	ve Comm unicati on /Writin g Skills /Effecti ve Writin g /Intervi ew Handli ng Skills /E- Mail Etiquet te Present ation Skills,					Ensu re signi fican t mob ilizat ion of reso urce s from a varie ty of sour ces		al Skills that match Industry &osulta ncy Needs/S oft Skills/S kill Develop ment



Unit III	This course is	This course is	This course is	This	meant	meant	Effecti	yes	-	-	-	1.a	-	Technic
	designed to	designed to teach	designed to	course is	to	to	ve	-				Ensu		al Skills
	teach Effective	Effective	teach Effective	designed	teach	teach	Comm					re		that
	Communicatio	Communication	Communicatio	to teach	effecti	effecti	unicati					signi		match
	n /Writing	/Writing Skills	n /Writing	Effective	ve	ve	on					fican		Industry
	Skills	/Effective Writing	Skills	Communi	comm	comm	/Writin					t		&osulta
	/Effective	/Interview	/Effective	cation	unicati	unicati	g					mob		ncy
	Writing	Handling Skills /E-	Writing	/Writing	on	on	Skills					ilizat		Needs/S
	/Interview	Mail Etiquette	/Interview	Skills	skills,	skills,	/Effecti					ion		oft
	Handling	Presentation Skills,	Handling Skills	/Effective	which	which	ve					of		Skills/S
	Skills /E-Mail	which are	/E-Mail	Writing	are	are	Writin					reso		kill
	Etiquette	fundamental	Etiquette	/Interview	essenti	essenti	g					urce		Develop
	Presentation	communication	Presentation	Handling	al for	al for	/Intervi					S		ment
	Skills, which	skills with regional	Skills, which	Skills /E-	emplo	Entrep	ew					from		
	are	relevance and	are	Mail	yment.	reneur	Handli					а		
	fundamental	development	fundamental	Etiquette		ship	ng					varie		
	communicatio	requirements.	communication	Presentati			Skills					ty of		
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Unit IV						1.a	-	Technic
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Unit	Relevance	to	the	local,	national,	regional	and	global	Relevance	То	the	Relevance	e to	the	SD	NE	POE/4 <sup>th</sup>
	developme	ntal r	needs						Employability	/		Profession	nal	Ethics,		Р	IR
									Entrepreneur	ship/	Skill	Gender,	Human	Values,			
									Development			Environn	nent	&			
												Sustainab	oility				



BP11 2RBT	Local	Regio nal	National	Global	Em ploy abil ity	Entrepr eneursh ip	Skill Developme nt	Pr ofe ssi on al Et hic s	Gender	H u an V al ue s	Enviro nment & Sustai nabilit y			
Unit I				The study of microscopy, including sample preparation, section cutting, mounting, staining, and permanent slide preparation, contributes to our understanding of various scientific disciplines . It enables researchers to investigate microscopic details, identify structures, analyze cellular and tissue components, and make important observations that impact global scientific knowledge and advancements			These experiment s and techniques contribute to our knowledge of biology, have practical application s in healthcare and forensic investigatio ns, and play a role in global		Remedi al Biology provides a foundati onal understa nding of the human body, includin g its structure s and function for both gender			(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability



Unit II	-	These studies provide essential knowledge for advancing scientific research, addressing global challenges, improving human health, promoting sustainable practices, and ensuring the preservation of our natural world.	research and understandi ng of living organisms.		(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability
Unit III	-	By advancing our knowledge of plant tissues through microscopic study and identification, we gain insights into plant biology, ecology,			(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability
Unit IV	-	The determination of blood group has significant implications in various medical settings, forensic investigations, and anthropological studies. It plays a crucial role in ensuring safe transfusions, successful organ transplantations, managing prenatal care, aiding forensic investigations, and			(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability

Unit	Relevance to the local, national, regional and global developmental needs		Relevance To the Employ <mark>api</mark> lity/ Entrepreneurship/ <b>≤S</b> kill	Development	Relevance to the Prof	Ethics, Gender, Human Values, Environment & Sustainability		SDG	NEP	POE/4 <sup>th</sup> IR		
				advancing our knowledge of human populations globally.								
Unit v				The determination of tida volume is valuable in assessing respiratory health, guiding mechanica ventilation, understanding exercise physiology monitoring occupationa and environmenta exposures, and enhancing sports performance. These applications have globa relevance in healthcare occupational safety environmental protection and sports medicine.	n 7 1 5 1 1 5 2 1					(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability

## Semester-II



BP201T											Sustainability				
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Su				
Unit I	_	_	-		_	_	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	_	_	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9 9.3)	.1-	Student centric Technical Skills that match Industry Needs



Unit II	-	-	_	-	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP 9.3)	(9.1-	Student centric Technical Skills that match Industry Needs
Unit III	-	-	-	_	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	NEP 9.3)	(9.1-	Student centric Technical Skills that match Industry Needs



Unit IV	-	-	-	-	-	-	Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	-	-	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	9.3)	Student centric Technical Skills that match Industry Needs
Unit V	-	_	_	-	-		Enrichment of thinking ability and creativity as well a tool for building confidence in the students which is done by providing opportunities to students to give presentations and debates in the classroom	1	Gender Based knowledge will benefit the students to respect and understand the other gender in a better way	-	-	SDG 3: Ensure healthy lives and promote well-being for all at all ages. SDG 4.4: Skills for Decent Work	21.10: Adult Education and Lifelong Learning	Student centric Technical Skills that match Industry Needs





Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human	Values, Environment & Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP2 02T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	To know standar d IUPAC nomenc lature of	_	-	Knowledge of nomenclature will help in naming unknown compounds	-	_	_	_	Skills for Dece nt Work (SD G 4.4)	Profess ional Educati on (17.1- 17.5)	Skill Develo pment



				compou nds									
Unit II		-	-	Fulfils underst anding of basic Elemin ation, substitu tion reaction for further synthesi s		Knowledge of basic Elimination, substitution reactions will help in synthesis of new unknown compounds	-	_	-		Skills for Dece nt Work (SD G 4.4)	Profess ional Educati on (17.1- 17.5)	Skill Develo pment
Unit III	-	-	-	Globall y aware about synthesi s of alkyl halide and alcohol	-	Study of alkyl halide and alcohol compound will help in synthesis of drugs containing alkyl halide and alcohol and their derivatives.	-	-	-	-	Skills for Dece nt Work (SD G 4.4)	Promot ing High- quality researc h (18.1- 18.9)	Skill Develo pment



Unit IV	-	-	-	Globall y aware about synthesi s of carbony l compou nd and their determi nation	-	Study of carbonyl compound will help in synthesis of drugs containing carbonyl group and their derivatives.		-	-	-	Skills for Dece nt Work (SD G 4.4)	Promot ing High- quality researc h (18.1- 18.9)	Skill Develo pment
Unit v	-	-	-	Globall y aware about synthesi s of carboxy lic compou nd and their determi nation	-	Study of carboxylic compound will help in synthesis of drugs containing carboxylic group and their derivatives.	-	-	-	-	Profe ssion al Educ ation (17.1 - 17.5)	Promot ing High- quality researc h (18.1- 18.9)	Skill Develo pment



Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/ Entrepreneurship/	Skill Development		Relevance to the Professional Ethics,	Gender, Human Values, Environment & Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP203T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	_	-	Underst and the importa nce of nutrient molecul es in physiolo gical and patholog ical conditio ns.	-	-	helps students to get familiar with real- world problems so that they can brainstor m new ideas to address them		1	-	_	Give basic knowledge about biomolecul es (SDG 4.2 & SDG 4.4); Subject help to acquire basic idea about Relationshi p between	Professi onal Educati on (17.1- 17.5)	Hands- on Experie nce Employ ability Skill Develop ment



												free energy, enthalpy and entropy; Redox potentialEn ergy rich compounds (SDG 7)		
Unit II	-	-	-	Carbohy drate metaboli c pathway s knowled ge hel to develop antidiab etics drug discover y and develop ment	-	-	This basic knowledg e helps, students would find themselve s more confident and ready for their careers.	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SDG 3) " Skills for Decent Work (SDG 4.4)	Professi onal Educati on (17.1- 17.5)	Technic al Skills that match Industry Needs; Skill Develop ment
Unit III	Help to know about balance diet and importance	-	-	-	-	-	biochemis ts may work to develop new medical products that help prevent diseases such as	-	-	-	-	Skills for Decent Work (SDG 4.4) (practical training in lab) "Ensure healthy lives and promote	Professi onal Educati on (17.1- 17.5)	Technic al Skills that match Industry Needs; Skill Develop ment



			Underset		atheroscle rosis, heart diseases			well-being for all at all ages (SDG 3) "	Tachais
Unit IV		-	Underst anding the structure and function of DNA has revoluti onised the study of disease pathway s, evaluati on of a person's genetic predispo sition to particula r diseases, diagnosi s of genetic abnorma lities, and		Purine metabolic pathways knowledg e help to develop gout drug discovery and developm ent			Skills for Decent Work (SDG 4.4) (practical training in lab) "Ensure healthy lives and promote well-being for all at all ages (SDG 3) "	Technic al Skills that match Industry Needs; Skill Develop ment



				develop ment of new medicati ons.										
Unit v	-	_	-	Help in drug discover y & develop ment by inhibitin g enzymes	_	-	Enzymes knowledg e helps us in drug designing	_	-	-	-	Skills for Decent Work (SDG 4.4) (practical training in lab)	Professi onal Educati on (17.1- 17.5)	Technic al Skills that match Industry Needs; Skill Develop ment

needs needs	o the hip/ ent	the the Ethics, Iuman mment	
and national neutral n	ce To ability/ velopm	ce to mal E Enviror nability	K
elevano cal, gional velopra	elevanc nploya dil Dev	elevanc elevanc ender, lues, l Sustai OG	EP OE/4 <sup>th</sup>



BP2 04T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability	Tracuna	Duc	Clabal
Unit I		-	_	To understand the studies related to basic principles of cell injury and adaptation of cell that helps in creating baseline knowledge	-	-	In gaining basic knowledge related to cell injury and also its adaptation	_	_		-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 ) Prof essi onal educ atio n (17. 1-	Global educatio n knowled ge



													17.5 )	
Unit II	-	-	-	To emphasize on the pathophysiology of diseases of cardiovascular, respiratory and renal system	-	-	Understanding basics of pathophysiological mechanism of diseases of cardiovascular, respiratory and renal system	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n (17. 1- 17.5 )	Global educatio n knowled ge
Unit III	-	-	-	The focus in understanding the pathophysiology of diseases of haematological, endococrine, nervous and gastrointestinal system	-	-	In gaining basic knowledge on pathophysiological mechanism of diseases of haematological, endococrine, nervous and gastrointestinal system	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n (17. 1- 17.5 )	Global educatio n knowled ge
Unit IV	-	-	-	To emphasize the pathophysiology of diseases of inflammatory bowel, bones and joints, and also principles of cancer.	-	-	Understanding basics of pathophysiological mechanism of diseases of inflammatory bowel diseases, bones and joints, and also principles of cancer.	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n (17. 1- 17.5 )	Global educatio n knowled ge



Unit	-	-	-	To emphasize the	-	-	In gaining ba	oasic -	-	-	-	Ensure	Prof	Global
v				pathophysiology of infectious			knowledge	of				healthy lives	essi	educatio
				diseases as well as sexually			pathophysiologic	ical				and promote	onal	n
				transmitted diseases.			mechanism	of				well-being for	educ	knowled
							infectious disea	eases				all at all ages	atio	ge
							as well as sexu	ually				SDG 3	n	
							transmitted	-					(17.	
							diseases.						1-	
													17.5	
													)	

to to tal needs tal needs	To the ity/ urship/ pment	to the L Ethics, Human ironment oility	
Relevance local, regional an developmen	Relevance Employabili Entrepreneu Skill Develo	Rele vance Professional Gender, Values, Env & Sustainab	SDG NEP POE/4 <sup>th</sup> IR



BP2 05T	Local	Regional Environmental	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability	SI:11	Onli	Employ
Unit I	Environmen tal Protection: Local environment al and sustainabilit y initiatives focus on protecting and preserving local	Regional Environmental Conservation: Regional initiatives focused on environmental and sustainability practices contribute to the conservation of regional ecosystems, natural resources, and biodiversity.	Environmenta I Protection: National- level environmenta I and sustainability initiatives focus on protecting and preserving the country's	Technol ogical Compet ence: The paragra ph introdu ces concept s and technol ogies	-	-	Technical Skills: Studying number systems, web technologie s, databases, and bioinformat ics allows individuals	-	-	-	Conser vation of Natural Resour ces: Enviro nmenta 1 and sustain ability practic es	Skill s for Dec ent Wor k (SD G 4.4)	Onli ne and Digi tal Edu catio n: Ens urin g Equi table	Employ ability
	ecosystems, natural resources, and biodiversity. T		ecosystems, natural resources, and biodiversity.	related to comput er systems , web develop ment,			to develop technical skills related to these areas. They can learn programmi				empha size the respon sible use and conser vation of		Use of Tec hnol ogy (24. 1- 24.5	



				databas			ng				natural			
				es, and			languages,				resourc		,	
				bioinfor			gain				es such			
				matics.			proficiency				as			
				By			in using				water,			
				acquirin			web				forests,			
				g skills			developme				minera			
				in these			nt tools,				ls, and			
				areas,			understand				energy			
				individ			database				sources			
				uals can			manageme							
				enhance			nt systems,							
				their			and acquire							
				technol			knowledge							
				ogical			of							
				compet			bioinformat							
				ence,			ics tools							
				which			and							
				is			databases.							
				increasi										
				ngly										
				importa										
				nt in a										
				globally										
				connect										
				ed										
				world.										
Unit	Community	Transboundary	Economic	Develo	-	-	Problem-	-	-	-	Mitigat	Sust	Stan	Coding
II	Health and	Cooperation:	Opportunities	ping			Solving				ion of	aina	dard	
	Well-being:	Environmental and	: Embracing	skills in			Skills:				Climat	ble	-	
	Environmen	sustainability challenges	environmenta	web			Learning				e Cl	Dev	setti	
	tal and	often transcend political	l and	technol			about				Chang	elop	ng	
	sustainabilit	boundaries	sustainability	ogies,			information				e: Enviro	ment	and	
	y practices		practices can	databas			systems, software					and Clob	Accr	
	have a direct		create	es, and							nmenta	Glob	edita	
	impact on		economic	bioinfor			developme				1 and	al	tion	



												1
	community		opportunities	matics			nt, and data		sustain	Citiz	for	
	health and		at the national	allows			analysis		ability	ensh	Sch	
	well-being.		level.	individ			fosters		efforts	ip	ool	
	By reducing		Investing in	uals to			problem-		play a	(SD	Edu	
	pollution		renewable	collabor			solving		crucial	G	catio	
	and		energy	ate and			skills.		role in	4.7)	n	
	promoting		projects, such	commu					mitigat	ŕ	(8.1-	
	clean and		as solar and	nicate					ing		8.11	
	sustainable		wind power,	effectiv					climate		)	
	practices,		can lead to	ely with					change		,	
	local		the	professi					and			
	initiatives		development	onals					reducin			
	can improve		of domestic	from					g			
	air and		green	differen					greenh			
	water		industries, job	t					ouse			
	quality,		creation, and	countrie					gas			
	reduce		reduced	s and					emissi			
	exposure to		dependency	cultural					ons.			
	harmful		on fossil	backgro								
	substances,		fuels.	unds.								
	and create		100101	unusi								
	healthier											
	living											
	environment											
	s.											
Unit	J. Local	Sustainable Resource	Climate	Develo	-	_	Analytical	-	 Biodiv	Pro	Tran	Skill
III	Economic	Management: Regions	Change	ping			Thinking:		ersity	mote	sfor	Embedd
	Opportunitie	often share common	Adaptation	skills in			The topics		Preserv	peac	min	ed
	s:	resources, such as water	and	data			mentioned		ation:	eful		Courses
	s. Embracing	basins, forests, and	Resilience:	manage			in the		Enviro	and	g the	Develop
	environment	fisheries.	National-	ment			paragraph		nmenta	inclu	Reg	ment
	al and	1151101105.	level	and			require		1 and	sive	ulat	ment
	sustainabilit		environmenta	analysis			analytical		sustain	soci		
			l and	2			thinking		ability	eties	ory Syst	
	• •			prepare			and data		initiati	for	Syst	
			sustainability	S individ							em (20.	
	local		initiatives are	11101110			analysis.		ves	susta	(20.	



 					1		
economic	crucial for	uals to	Whether it's	focus	inabl		
opportunitie	adapting to	handle	converting	on	e	20.1	
s. For	the impacts of	large	number	preserv	deve	5)	
example,	climate	volume	systems,	ing	lop		
investing in	change and	s of	analyzing	biodive	ment		
renewable	building	data,	data in	rsity	,		
energy	resilience.	extract	databases,	and	prov		
projects can		meanin	or	protect	ide		
lead to the		gful	performing	ing	acce		
developmen		insights	bioinformat	ecosyst	ss to		
t of green		, and	ics	ems	justi		
jobs and the		make	analysis,		ce		
growth of		informe	individuals		for		
clean energy		d	develop		all		
industries in		decisio	analytical		and		
the local		ns.	thinking		buil		
area.			skills.		d		
					effec		
					tive,		
					acco		
					unta		
					ble		
					and		
					inclu		
					sive		
					instit		
					utio		
					ns at		
					all		
					level		
					s		
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Unit	Resilience	Regional Economic	Policy and	Pharma	-	-	Collaborati	-	-	-	Polluti	Ensu	Tec	On-
IV	to Climate	Development:	Regulatory	ceutical			on and				on	re	hnol	Campus
	Change:	Environmental and	Frameworks:	Industr			Communic				Preven	healt	ogy	/Online
	Local	sustainability practices	National-	у			ation:				tion	hy	Use	Jobs
	communitie	can have a positive	level	Advanc			Many of				and	lives	&	
	s that	impact on regional	environmenta	ements:			the topics				Enviro	and	Inte	
	prioritize	economic development.	1 and	The			mentioned				nmenta	pro	grati	
	environment	<b>^</b>	sustainability	applicat			in the				1	mote	on	
	al and		practices	ion of			paragraph,				Health:	well	(23.	
	sustainabilit		involve the	comput			such as				Enviro	-	1-	
	y measures		development	ers in			web				nmenta	bein	23.1	
	are better		and	pharma			technologie				1 and	g for	3)	
	equipped to		implementati	cy, such			s and				sustain	all at		
	adapt to the		on of policy	as drug			databases,				ability	all		
	impacts of		and	informa			involve				practic	ages		
	climate		regulatory	tion			collaborativ				es aim	(SD		
	change. This		frameworks.	storage,			e work and				to	G 3)		
	includes		Governments	pharma			effective				prevent			
	implementin		establish	cokineti			communica				polluti			
	g climate		laws,	cs, drug			tion.				on,			
	change		regulations,	design,							reduce			
	adaptation		and standards	electron							enviro			
	strategies,		to promote	ic							nmenta			
	such as		sustainable	prescrib							1			
	building		practices	ing							contam			
	resilient		across various	systems							ination,			
	infrastructur		sectors, such	, and							and			
	e, protecting		as energy,	barcode							promot			
	coastal areas		transportation	medicin							e .			
	from sea-		, waste	e							enviro			
	level rise,		management,	identifi							nmenta			
	and		and	cation,							l health			
	implementin		agriculture.	has a										
	g drought			global										
	management			impact										
	plans.			on the										



				pharma ceutical industry							
Unit	Community Engagement and Empowerme nt: Local environment al and sustainabilit y initiatives often involve community engagement and empowerme nt.	Knowledge Sharing and Capacity Building: Regional environmental and sustainability initiatives provide opportunities for knowledge sharing and capacity building	Education and Awareness: National- level environmenta 1 and sustainability initiatives focus on education and awareness- raising campaigns. By promoting environmenta 1 literacy and awareness among citizens, governments can foster a culture of sustainability and responsible environmenta 1 stewardship.	of bioinfor matics in vaccine		Research and Information Gathering: The paragraph includes topics related to drug information storage, pharmacoki netics, bioinformat ics, and data analysis. Studying these areas develops skills in research and information gathering.		Polluti on Preven tion and Enviro nmenta 1 Health: Enviro nmenta 1 and sustain ability practic es aim to prevent polluti on, reduce enviro nmenta 1 contam ination, and promot e enviro	1.3 Impl eme nt natio nally appr opri ate soci al prot ectio n syste ms and mea sure s for all, inclu ding floor s	Tow ards a Mor e Holi stic and Mult idisc iplin ary Edu catio n (11. 1- 11.1 3)	Updated Curricul um



		and						ĺ.
		develop						ĺ
		ing						ĺ
		vaccine						ĺ
		s.						ĺ

Unit	Relevance to global develo	Relevan Employ Entrep: Develop	ability reneur:		the Skill		, Geno	ler, Hu	Professional ıman Values, ainability	SDG	NEP	POE/4 <sup>th</sup> IR			
BP2 06T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development		Professional Ethics	Gender	Human Values	Environment & Sustainability			



Unit	-	-	-	Awareness	-	-	Familiar and	-	-	-	Reduction of	Ensure	Global	Consulting
Ι				about			identification				threat on	healthy	Educa	Field
				different			and knowledge				natural	lives and	tion	Projects,
				natural			of different				resources.	promote	Knowl	Projects
				resources, i.e.			environmental					well-	edge	5
				renewable/no			resources and					being for	0	
				n- renewable			their					all at all		
				energy			components.					ages		
				resources &			1					(SDG 3)		
				etc										
												Ensure		
												access to		
												affordabl		
												е,		
												reliable,		
												sustainab		
												le and		
												modern		
												energy		
												for all		
												(SDG 7)		
												Promote		
												sustained		
												,		
												inclusive		
												and		
												sustainab		
												le		
												economic		
												growth,		
												full and		
												productiv		
												e		
												employm		
												ent		
												and		



					decent
					work for
					all
					(SDG 8),
					Take
					urgent
					action to
					combat
					climate
					change
					and its
					impacts
					(SDG
					13),
					15), Drotoot
					Protect,
					restore
					and
					promote
					sustainab
					le use of
					terrestrial
					ecosyste
					ms,
					sustainab
					ly
					manage
					forests,
					combat
					desertific
					ation,
					and halt
					and
					reverse
					land
					degradati
					on and
					on and



								halt biodivers ity loss (SDG 15)		
Unit II	-	-	knowledge of different ecological systems, their structure and functions	Com merci				Protect, restore and promote sustainab le use of terrestrial ecosyste ms, sustainab ly manage forests, combat desertific ation, and halt and reverse land degradati on and halt biodivers ity loss (SDG 15)	Promo ting Highj- qualit y resear ch (18.1- 18.9)	Case Competitio ns



Unit	-	-	Know about				Promote	Team
III			factors				peaceful	Work, skill
			affecting				and	developme
			components				inclusive	nt,
			of				societies	Case
			environment				for	Competitio
			& their				sustainab	ns
			adverse				le	
			effect on				develop	
			individual				ment,	
			health.				provide	
			Introduction				access to	
			of Public				justice	
			awareness				for all	
			programmes.				and build	
			Introduce and				effective,	
			implementati				accounta	
			on of Laws &				ble and	
			Acts there				inclusive	
			on.				institutio	
							ns at all	
							levels	
							(SDG 16)	
							Revitaliz	
							e the	
							global	
							partnersh	
							ip for	
							sustainab	
							le	
							develop	
							ment	
							(Role of	
							all	
							Schools,	
							KRMU)	

tiun Relevance to the local, national, regional and global developmental needs	K.R. MANGALAM	Relevance To C the Employability/ Entrepreneurship/ aSkill Development AI	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability	SDG	NEP POE/4 <sup>th</sup> IR	
					2 4 DG 17)	



<b>BP207P</b>														
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I Practical 1-3			The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole			-	Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and they will be able to corelate the knowledge and	-				SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



							information gathered in their day-to- day life and future job prospectives						
Unit II Practical 4-6	-	-	The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole	-	-	-	also Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and they will be able to correlate the knowledge and information gathered in their day-to- day life and future job prospective also	-	-	-	SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



Unit III Practical 7-9			The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole				Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way and they will be able to correlate the knowledge and information gathered in their day-to- day life and future job prospective also			-		SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs
Unit IV Practical 10-12	-	-	The concepts once imbibed will help the students to use the practical	-	-	-	Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to	-	The practical knowledge of the contraceptive methods and related topics will enrich the	-	-	SDG 3: Ensure healthy lives and promote well- being for all at	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



			information in providing better health services to the nation as a whole				understand the physiology of skin and diseases related to the		knowledge of the students in the field			all ages. SDG 4.4: Skills for		
							system in a better way and they will be able to correlate the knowledge and information gathered in their day-to- day life and future job prospective					Decent Work		
Unit V Practical 13-16	-	-	The concepts once imbibed will help the students to use the practical information in providing better health services to the nation as a whole	-	-	-	also Enrichment of thinking ability and creativity. The practical knowledge of the topic will help them to understand the physiology of skin and diseases related to the system in a better way	-	The practical knowledge of the contraceptive methods and related topics will enrich the knowledge of the students in the field	-	-	SDG 3: Ensure healthy lives and promote well- being for all at all ages. SDG 4.4: Skills for Decent Work	NEP (9.1- 9.3)	Student centric Technical Skills that match Industry Needs



		and they will				
		be able to				
		correlate the				
		knowledge				
		and				
		information				
		gathered in				
		their day-to-				
		day life and				
		future job				
		prospective				
		also				

Unit	the mal, obal eds	the tt	the hics, nent	
	to d gld al ne	To ty/ inchij	to Etl Hun Tronn liity	
	nent ment	ice abili veloj	Envi Envi	X
	levan al, relop	evan ploy II De	levan ofessi busta Susta	E/4 <sup>th</sup>
	Rel loca dev	Rel Em Ski	SD SD SD	<b>DO</b>



BP208 P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values				
Unit I	-	-	-	Fulfils the need for Drug Develop ment globally	-	-	Knowledge of Physicochemical properties of Drugs helps in Preformulation studies	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1- 17.5)	Skill Develop ment
Unit II		-	-	Fulfils the need for determin ation of different groups	-	-	Knowledge of determination of unknown compounds will help in identification of new synthesized compounds	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1- 17.5)	Skill Develop ment
Unit III	-	-	-	Fulfils the need for Drug Develop ment globally	-	-	Knowledge of synthesis of different derivatives helps in synthesis of new moieties	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High- quality research (18.1-18.9),	Skill Develop ment, Employ ability



BP2 09P	Unit
Local	Relevance to the local, national, regional and
Regional	
National	
Global	
Employability	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	
Skill Development	
Professional Ethics	Relevance to the Professional Ethics, Gender, Human Values, Environment &
Gender	Sustama bunty
Human Values	
Environment Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit	Experiments involving laboratory	Α	-	-	-	-	Sust	Quality	Global
Ι	techniques like recrystallization,	knowledge					aina	Universities	Educati
	steam distillation is important part	able					ble	and	on
	of pharmaceutical sciences	individual					Dev	Colleges: A	Knowle
	experiment. These experiments are	in organic					elop	New and	dge
	usually conducted all over the	chemistry					ment	Forward-	Practica
	world.	aids in the					and	looking	1
		synthesis of					Glob	Vision for	Courses
		drugs and					al	India's	from
		their					Citiz	Higher	Industry
		intermediat					ensh	Education	/Alumni
		es.					ip	System (9.1-	Technic
							(SD	9.3)	al Skills
							G	Professional	that
							4.7)	Education	match
								(17.1-17.5)	Industry
							Scho	Promoting	Needs
							larsh	Highj-	Focus
							ips	quality	on
							for	research	Employ
							High	(18.1-18.9)	ability
							er	Technology	Skills
							Educ	Use &	(Local/
							ation	Integration	Regiona
							(SD	(23.1-	1 and
							G	23.13)	Global)
							4.b)		Internsh
							Revi		ip
							taliz		Program
							e the		S Com 1/1
							glob		Consulti
							al north		ng Field
							partn		Projects
							ershi		Entrepre
							p for		neurship
							susta		Program



				inabl e deve lopm ent (SD G 17)		through Innovati on System
Unit II	The determination of acid/ saponification/ iodine value of fats and oils has a significant global impact by ensuring quality, stability, and functionality in various industries, promoting sustainability, and facilitating international trade.	A knowle able individ in or chemis aids it synthe drugs their interm es	dual ganic stry n the sis of and	Sust aina ble Dev elop ment and Glob al Citiz ensh ip (SD G 4.7) Scho larsh ips for High er Educ ation (SD G 4.b) Revi taliz	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	Global Educati on Knowle dge Practica l Courses from Industry /Alumni Technic al Skills that match Industry Needs Focus on Employ ability Skills (Local/ Regiona l and Global) Internsh ip



						e the glob al partn ershi p for susta inabl e deve lopm ent (SD G 17)		Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit III	Chemical, drug, and intermediate preparation is a key part of the pharmaceutical sector globally.	A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat es	-	_	-	Sust aina ble Dev elop ment and Glob al Citiz ensh ip (SD G 4.7) Scho larsh ips for High er	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9)	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry Needs Focus on Employ ability



						Educ	Technolog	у	Skills
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						(SD	Integration		Regiona
						G	(23.1-		1 and
						4.b)	23.13)		Global)
						Revi			Internsh
						taliz			ip
						e the			Program
						glob			S
						al			Consulti
						partn			ng Field Projects
						ershi			Projects
						p for			Entrepre
						susta			neurship
						inabl			Program
						e			through
						deve			Innovati
						lopm			on
						ent			System
						(SD			
						G			
						17)			

Sem-III

Unit	the ional, leeds eeds	the nt	the thics, neuting ment
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	ance opme	zance loyabi Devel	ance ance sesiona seria staina 4th IR
	Relev local, devel devel	Emple Entre Skill	Profe Gend & Sur & Sur POE



BP3 01T											&			
011	Local	Regional	Vational	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment Sustaina bility			
Unit I				The knowledge of general methods of preparation and reactions of Benzene and its derivatives has global importance			A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat es.	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships for Higher Educat ion (SDG 4.b) Revita lize the	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry Needs Focus on Employ ability



									global partner ship for sustain able develo pment (SDG 17)	(18.1-18.9) Technology Use & Integration (23.1- 23.13)	Skills (Local/ Regiona 1 and Global) Internsh ip Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit II		The exploration of qualitative analysis, general methods of preparation and reactions of phenols, acids and amines is an essential part of the pharmaceutical sciences and has global importance.		A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education	Global Educati on Knowle dge Practica l Courses from Industry /Alumni



			es		rships for Higher Educat ion (SDG 4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	Technic al Skills that match Industry Needs Focus on Employ ability Skills (Local/ Regiona 1 and Global) Internsh ip Program s
					for sustain able develo pment (SDG	Integration (23.1-	l and Global) Internsh ip Program s Consulti ng Field
							Projects Entrepre neurship Program through Innovati on System



Unit		A -	-	-	-	Sustai	Quality	Global
III		knowledge				nable	Universities	Educati
	The global importance of studying	able				Devel	and	on
	fats and oils lies in their role in	individual				opmen	Colleges: A	Knowle
	human nutrition, food industry	in organic				t and	New and	dge
	development, agriculture, industrial	chemistry				Global	Forward-	Duration
	applications, and environmental	aids in the				Citize	looking	Practica
	sustainability.	synthesis of				nship	Vision for	I Courses
		drugs and				(SDG	India's	from
		their				4.7)	Higher	Industry
		intermediat				Schola	Education	/Alumni
		es				rships	System (9.1-	Aluiiiii
						for	9.3)	Technic
						Higher	,	al Skills
						Educat	Professional	that
						ion	Education	match
						(SDG	(17.1-17.5)	Industry
						(52 C 4.b)	Promoting	Needs
						,	Highj-	Focus
						Revita	quality	
						lize	research	on Employ
						the	(18.1-18.9)	ability
						global	(10.1-10.9)	Skills
						partner	Technology	(Local/
						ship	Use &	Regiona
						for	Integration	l and
						sustain	(23.1-	Global)
						able	23.13)	Giobal)
						develo		Internsh
						pment		ip
						(SDG		Program
						17)		S



								Consulti ng Field Project Entrepre neurship Program through Innovati on System
Unit IV	The knowledge of general methods of preparation and reactions of Polynuclear hydrocarbons has global importance.		A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat es			Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships for Higher Educat ion (SDG 4.b) Revita lize the	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry Needs Focus on Employ



									global partner ship for sustain able develo pment (SDG 17)	(18.1-18.9) Technology Use & Integration (23.1- 23.13)	ability Skills (Local/ Regiona l and Global) Internsh ip Program s
											Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit V		The knowledge of general chemistry, methods of preparation and reactions of Cyclo alkanes has global importance.		A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7)	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher	Global Educati on Knowle dge Practica l Courses from Industry



	es	Schola rships for Higher Educat ion (SDG 4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	/Alumni Technic al Skills that match Industry Needs Focus on Employ ability Skills (Local/ Regiona I and Global) Internsh ip Program s Consulti ng Field Projects Entrepre
		17)		Consulti ng Field



Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human Values. Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP 302T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Global Healthc are Needs. It will increase the solubilit y of poorly soluble			It will bring preformulat ion knowhow in the students	-	-	-	-	Ensu re healt hy lives and pro mote well - bein	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs



			drugs.							g for all at all ages (SD G 3)		
Unit II	-	-	Global Healthc are Needs. It will detail physioc hemical needs in the new lyformu lated drug product s		It will create the analytical knowhow among the students	-	-	-	-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD G 3)	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs
Unit III	-	-	Global Healthc are Needs. It will create the dosage form develop ment in		It will improve the skill of developing different biphasic dosage forms and the remedies to overtake	-	-	-	-	Ensu re healt hy lives and pro mote well - bein	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs



			differed forms with differed release properti es.	the problems.					g for all at all ages (SD G 3)		
Unit IV	-	-	Global Healthc are Needs. It will increase the pharma cokineti cs basis among the clinical trials of differed drugs among the dtudent s.	It will generate the technical knowhow among the students towards the animal and human studies.	-	-		-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD G 3)	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs
Unit v			Global Healthc are Needs. It will be hghly helpful to	It will bring the skill among the students to work in the research & developme nt labs.	-	-	-	-	Ensu re healt hy lives and pro mote well	Prof essi onal Edu catio n (17. 1- 17.5	Technic al Skills that match Industry Needs



		students				-	)	
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Local Relevigiobal Regional	
Regional	Relevance to the local, national, regional and global developmental needs
National	
Global	
Employability Entre	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	, ,
Skill Development	
Professional Ethics Relev Huma	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability
Gender	
Human Values	
Environment & Sustainability	
SDG	
NEP	
POE/	POE/4 <sup>th</sup> IR



Unit I	-		Its shown a remarkable opportunity to improve the standard of national pharmacy practice.	orward-			Many tools to facilitate, microbiology learning objects of lab-related and data-driven exercises.	or	-	-	N o	-	"Ma ke citie s and hum an settl eme nts inclu sive, safe, resili ent and susta inabl e (SD G 11)"	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge
Unit II	-	-	Imparts knowledge in various aspects of marketing and its applications.	future skilling requires and	_	-	Apply to a wid variety o problems affecting th overall huma condition.	of le	-	-	-	-	"Ma ke citie s and hum an settl eme nts inclu sive,	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



											safe, resili ent and susta inabl e (SD G 11)"		
Unit III	Aids in underst anding the variety of microo rganis ms and fungus	Gives a fundamental understanding of the variety of creatures and forms of algae.	origin, continuity, complexity of molecular life activities, and cytological aspects	-	-	Recognise the significance of micro methods in plant anatomy.	-	-	-	-	"Ma ke citie s and hum an settl eme nts inclu sive, safe, resili ent and susta inabl e (SD G 11)"	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



Unit IV	Aids in	Encour ages	Offers national protection	Provides protection against food poisoning	-	-	Apply to a wide	-	-	-	-	"Ma ke	Pro moti	Global Educati
	learn	physica	from food				variety of					citie	ng	on
	ing	1 and	poisoning.				problems					s	Hig	Knowle
	abou	cogniti					affecting the					and	hj-	dge
	t the	ve					overall human					hum	qual	
	biol	health					condition.					an	ity	
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Unit v	-	-	Improves	Environmental	-	-	Develops research	-	-	-	-	"Ma	Pro	Global
			Human Health	concerns, ecological			aptitude					ke	moti	Educati
			and well being	preservation,								citie	ng	0n Knowla
			·	sustainable living, and the defence of human								s and	Hig hj-	Knowle
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BP 304T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability		
Unit I				It enables optimization of processes, quality control, and efficient utilization of resources, leading to improved product performance and operational efficiency.	Making individuals well-suited for roles in industries where fluid handling, particle analysis, and process optimization are critical.							 	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit II				This knowledge is valuable for designing efficient systems, optimizing processes, ensuring product quality, and improving energy efficiency.	It enhances employability in industries such as chemical engineering, process engineering, energy management, and manufacturing.							 	Focus on Employ ability Skills (Local/ Regiona 1 and Global)



Unit III	 	 Helps working in industries where drying and mixing play a critical role in product development, quality control, and manufacturing efficiency.	Enhance employability in process engineering, product development, quality assurance, manufacturing, research and development, technical sales, and consulting roles across various industries.	 	 	 	 	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit IV	 	 Provides essential knowledge and skills applicable to industries involving separation processes, purification, particle removal, and fluid clarification	Valuable in sectors such as pharmaceuticals, biotechnology, chemical engineering, water treatment, and food processing, where efficient separation techniques are critical for product quality, safety, and process optimization	 	 	 	 	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit v	 	 Crucial for ensuring the selection of appropriate materials, preventing material degradation and failure, and optimizing material flow and handling processes in pharmaceutical plant operations. This knowledge contributes to the safe, efficient, and compliant functioning of pharmaceutical manufacturing facilities.	Provides diverse range of employment opportunities in the pharmaceutical industry, including roles in engineering, operations, quality assurance, research and development, and environmental health and safety.	 	 	 	 	Focus on Employ ability Skills (Local/ Regiona 1 and Global)



Unit	Relevance to the local, national, regional and global developmental needs			Relevance To the Employability/ Entrepreneurship/ Skill Development			Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability				SDG	NEP	POE/4 <sup>th</sup> IR	
BP 305P											&			
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment Sustainability			
Unit I				Experiments involving laboratory techniques like recrystallization, steam distillation is important part of pharmaceutical sciences experiment. These experiments are usually conducted all over the world.			A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat es.	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships for Higher Educat	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5)	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry



									ion (SDG 4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	Promoting Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	Needs Focus on Employ ability Skills (Local/ Regiona 1 and Global) Internsh ip Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit II		The determination of acid/ saponification/ iodine value of fats and oils has a significant global impact by ensuring quality, stability, and functionality in various industries, promoting sustainability, and facilitating international trade.		A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediat es	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1-	Global Educati on Knowle dge Practica l Courses from Industry /Alumni Technic



							for Higher Educat ion (SDG 4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	9.3) Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	al Skills that match Industry Needs Focus on Employ ability Skills (Local/ Regiona 1 and Global) Internsh ip Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit III	Chemical, drug, and intermediate preparation is a key part of the pharmaceutical sector globally.	A knowledge able individual in organic chemistry aids in the synthesis of	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship	Quality Universities and Colleges: A New and Forward- looking Vision for	Global Educati on Knowle dge Practica 1 Courses



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			drugs and			(SDG		from
			their			4.7)	Higher	Industry
			intermediat			Schola	Education	/Alumni
			es			ships	System (9.1-	Technic
						or	9.3)	al Skills
					H		Professional	that
							Education	match
						on	(17.1-17.5)	Industry
						SDG	Promoting	Needs
						4.b)	Highj-	Focus
					F	Revita	quality	on
					1	ize	research	Employ
					ť	he	(18.1-18.9)	ability
					g	global	Technology	Skills
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						ship	Integration	Regiona
						for	(23.1-	1 and
						sustain	23.13)	Global)
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Unit	/ance	local, national, regional and global	aevelopmental needs		Relevance To the Emplovability/	Entrepreneurship/ Skill Development		Relevance to the Deofossional Ethios		Values, Environment &	Sustainability	SDG	NEP	POE/4 <sup>th</sup> IR
306P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Contribute globally in the field of solubility and pKa determination by conducting research, sharing knowledge, and collaborating with scientists worldwide to advance understanding and develop innovative methodologies.	-		Contribute to skill development in solubility and pKa determination using Half Neutralization/Henderson- Hasselbalch by conducting workshops and training programs to educate researchers and scientists on the principles, techniques, and applications of these methods, fostering their expertise and advancement in the field.		N o			(SD G4.1 )	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)



				Additionally, develop online resources and interactive platforms to facilitate self-learning and knowledge sharing, promoting skill development globally.					
Unit II	 	 Contribute globally in the field of partition coefficient and % composition determination of NaCl in a phenol-water solution by conducting research, developing accurate CST methods, and sharing findings to enhance scientific understanding and promote global collaboration in this area.	-	 Contribute to skill development in the field of partition coefficient and % composition determination of NaCl in a phenol-water system by offering training programs, workshops, and hands-on practical sessions to empower researchers and scientists with the necessary techniques and expertise. Additionally, develop educational resources and online platforms for knowledge sharing to reach a wider audience and promote skill development in this area.	 N o	 	(SD G4.1 )	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit III	 	 By conducting research, creating standardised protocols, and working with scientists around the world, you can make a significant global contribution to the field of surface tension and the calculation of Hydrophilic-Lipophilic Balance (HLB), helping to advance knowledge, enhance measurement methods, and foster international harmony in surface tension and HLB determination.	-	 Contribute to skill development in the field of surface tension and determination of Hydrophilic- Lipophilic Balance (HLB) by providing training programs, hands- on workshops, and educational resources that empower researchers and scientists with the necessary knowledge and techniques for accurate measurement and interpretation of surface tension and HLB values. Additionally, foster collaboration and knowledge- sharing platforms to enhance skill development and exchange of expertise in these areas.	 N o	 	(SD G4.1 )	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)



Unit	 	 Contribute globally to the field of	-	 By providing training programmes,	 Ν	 	(SD	(18.	Focus
IV		stability constant determination and		workshops, and hands-on sessions	0		G4.1	1-	on
		donor-acceptor ratio calculation of		that concentrate on the solubility			)	18.9	Employ
		PABA-Caffeine and Cupric-Glycine		method and pH titration method,				)	ability
		complexes by conducting research,		you can help researchers and					Skills
		developing standardized solubility		scientists develop their skills and					(Local/
		and pH titration methods, and sharing		advance in their field while also					Regiona
		findings to enhance global		making a contribution to the field					1 and
		understanding, promote accurate		of stability constant determination					Global)
		characterization of complex		and donor-acceptor ratio calculation					
		formation, and facilitate		of PABA-Caffeine and Cupric-					
		collaboration among scientists		Glycine complexes.					
		worldwide.							
Unit	 	 Important for guaranteeing the choice	-	 	 Ν	 	(SD	(18.	Focus
v		of suitable materials, avoiding			0		G4.1	1-	on
		material degradation and failure, and					)	18.9	Employ
		improving material flow and						)	ability
		handling procedures in							Skills
		pharmaceutical plant operations. The							(Local/
		safe, effective, and legal operation of							Regiona
		pharmaceutical production facilities							l and
		is facilitated by this information.							Global)

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BP 307P											ity			
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	It has shown a wonderful chance to raise the bar for national pharmacy practise.	Antibiotic control programmes are expanding globally and are crucial for society to be effective and forward-thinking.	-	-	Apply to a wide range of issues affecting people's general well- being.	-	-	-	-	Sust aina ble Dev elop ment and Glob al Citiz ensh ip (SD G 4.7)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge
Unit II		-	Imparts knowledge in various aspects of marketing and its	Staining and sterilisation are necessary for current and future generations to be skilled globally.	-	-	Apply to a wide range of issues affecting people's general well- being.	-	-	-		Sust aina ble Dev	Pro moti ng Hig hj-	Global Educati on Knowle dge



			applications.									elop ment and Glob al Citiz ensh ip (SD G 4.7)	qual ity rese arch (18. 1- 18.9 )	
Unit III		Aids in underst anding the variety of microo rganis ms and fungus	Gives a fundamental understanding of the variety of creatures and forms of algae.	origin, continuity, complexity of molecular life activities, and cytological aspects	-	-	Recognise the significance of micro methods in plant anatomy	-	-	-	-			
Unit IV	Help s stud ents gain kno	Encour ages physica 1 and cogniti ve health	Provides nationwide protection from foodborne illness.	Provides protection against food poisoning globally.								Sust aina ble Dev elop ment and Glob al Citiz ensh ip (SD G	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



cal, and phys ical syste ms that keep peop le healt hy and happ y.Unit v-	e b t	Human rights protection, ecological preservation, environmental issues, and sustainable life.	-	-	Develops research aptitude	-	-	-	-	4.7) Sust aina ble Dev elop ment and Glob al Citiz ensh ip (SD G 4.7)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge	
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Unit	Relevance to the	local, national, regional and global	developmental needs		Relevance To the Employability/ Entrepreneurship/ Skill Development		1	Relevance to the Professional Ethics		Environment &	Sustaina bility	SDG	NEP	POE/4 <sup>th</sup> IR
308P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	I			It provides process optimisation, quality assurance, and resource- efficient resource use, which improves product performance and operating efficiency.	Enabling people to perform well in positions in sectors where fluid handling, particle analysis, and process optimisation are essential.				N 0			SDG 6)	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit II				This knowledge is valuable for designing efficient systems, optimizing processes, ensuring product quality, and improving energy efficiency.	It increases one's employability in sectors including manufacturing, energy management, chemical engineering, and process engineering.							SDG 6)	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/



									Regiona l and Global)
Unit III	 	 Aids those who operate in fields where drying and mixing are essential for product development, quality assurance, and production effectiveness.	The improvement of employability in process engineering, product development, quality control, manufacturing, R&D, technical sales, and consulting professions across many industries.	 	 	 	SDG 6)	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit IV	 	 Provides essential knowledge and skills applicable to industries involving separation processes, purification, particle removal, and fluid clarification	Valuable in sectors such as pharmaceuticals, biotechnology, chemical engineering, water treatment, and food processing, where efficient separation techniques are critical for product quality, safety, and process optimization	 	 	 	SDG 6)	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)
Unit v	 	 Important for guaranteeing the choice of suitable materials, avoiding material degradation and failure, and improving material flow and handling procedures in pharmaceutical plant operations. The safe, effective, and legal operation of pharmaceutical production facilities is facilitated by this information.	Provides diverse range of employment opportunities in the pharmaceutical industry, including roles in engineering, operations, quality assurance, research and development, and environmental health and safety.	 	 	 	SDG 6)	(18. 1- 18.9 )	Focus on Employ ability Skills (Local/ Regiona 1 and Global)



## Sem-IV

Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human Values, Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP4 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Nomen clature of optical isomers and separati on is used	Synt hesi s and sepa ratio n of opti cal	-	There are four methods to separation of isomers. Which develop skills	Usage of any medicine especiall y isomers is based on appropria te	-	-	-	Skill for dece nt wor k SDG 4.4.	Prof essi onal Edu catio n (17. 1- 17.5	It helps in developi ng technica l skills that industry requires



			globaly	iso mer gen erat e emp loy men t.			professin onal ehi <i>c</i> s.				)	.And thus helps in creating employ ment.
Unit II	-	_	Geomet rical isomeri sm Nomen clature of geometr ical isomers (Cis Trans, EZ, Syn Anti systems	Pro duct ion of zeo metr ic iso mer sacr oss the glob e prov ides a lot of emp loy men t.	Producti on of Geometr ic isomersa cross the globe provides a lot of employ ment.	A Geometric isomers developed syntheticall y, helps in honing the technical skill and expertise in production	-	_	_	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Skill Develop ment



Unit III			-	Synthes is, reaction s and medicin al uses of followi ng compou nds/deri vatives Pyrrole, Furan, and Thioph ene Relativ e aromati city and reactivit y of Pyrrole, Furan and Thioph	Synt hesi s of drug s cont aini ng Pyrr ole, fura n and Thi oph ene glob e prov ides a lot of emp loy men t.		Synthesis of furan thiophene and Pyrrole, helps in honing the technical skill and expertise in production		-	-	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Skill Develop ment
Unit IV	-	-	-	Thioph ene Pyrazol e, Imidazo le, Oxazol e and Thiazol	Synt hesi s of drug s cont aini	-	Synthesis of furan Quinoline Isoquinolin e, acridine helps in honing the	-	-	-	Skill s for Dec ent Wor k (SD	Prof essi onal Edu catio n (17.	Skill Develop ment



				e.	nσ		technical			G	1-	
				Pyridin	ng Pyri		skill and			4.4)	17.5	
				e,	din,		expertise in			,	)	
				Quinoli	Qui		production				,	
				ne,	noli		production					
				Isoquin	ne							
				oline,	Isoq							
				Acridin	uino							
				e and	line							
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Unit	-	_	-	Fulfils	Opp	-	Docking	 -	-	Skill	Prof	Skill
v				the	ena		techniques			s for	essi	Develop
				need for	uer-		helps in			Dec	onal	ment
				Reactio	oxid		acing			ent	Edu	
				ns of	atio		technical			Wor	catio	
				syntheti	n		skill,			k	n	
				c	and		Oppenauer-			(SD	(17.	
				importa	Dak		oxidation			Ġ	1-	
				nce	in		and Dakin			4.4)	17.5	
				globally	reac		reaction.			· ·	)	
				uding	tion.		Beckmanns				-	
				docking	Bec		rearrangem					
				techniq	kma		ent and					
				ues.	nns		Schmidt					
					rear		rearrangem					



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BP402 T	Unit
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	
Skill Development	
Professional Ethics	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability
Gender	<b>`</b>
Human Values Environment & Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit I	-	-	-	Fulfils	-	-	Knowledge of	-	-	-	-	Skills for	Professional	Skill
				the need			Physicochemical					Decent Work	Education (17.1-	Develop
				for Drug			properties of					(SDG 4.4)	17.5)	ment
				Develop			Drugs helps in					. ,	,	
				ment			Preformulation							
				globally			studies							
Unit II		-	-	Fulfils	-	-	Study of SAR	-	-	-	-	Skills for	Professional	Skill
				the need			and synthesis of					Decent Work	Education (17.1-	Develop
				for			drugs acting on					(SDG 4.4)	17.5)	ment
				Develop			Sympathetic					. ,	,	
				ment of			nervous system							
				Drug			helps in New							
				acting on			drug synthesis							
				ANS			and Drug							
				(Sympath			development							
				etic)			process							
				globally			•							
Unit III		-	-	Fulfils	-	-	Study of SAR	-	-	-	-	Skills for	Professional	Skill
				the need			and synthesis of					Decent Work	Education (17.1-	Develop
				for			drugs acting on					(SDG 4.4)	17.5)	ment
				Develop			Parasympathetic						·	
				ment of			nervous system							
				Drug			helps in New							
				acting on			drug synthesis							
				ANS			and Drug							
				(parasym			development							
				pathetic)			process							
				globally			-							
Unit IV		-	-	Fulfils	-	-	Understand the	-	-	-	-	Youth and	Adult Education	Skill
				the need			chemistry of					Adult	and Lifelong	Develop
				for			drugs with					Literacy	Learning (21.1-	ment
				Develop			respect to their					(SDG 4.6)	21.10)	
				ment of			pharmacological					-		
				Drugs			activity							
				acting on			-							
				CNS										



				globally										
Unit V	-	-	-	Globally	-	-	It imparts	-	-	-	-	Youth and	Adult Education	Skill
				Aware			fundamental					Adult	and Lifelong	Develop
				youth			knowledge on					Literacy	Learning (21.1-	ment
				about			the structure,					(SDG 4.6)	21.10)	
				uses and			chemistry, SAR,							
				side			Synthesis and							
				effect of			therapeutic							
				Narcotics			value of drugs							
							acting on CNS							
							which helps in							
							generating new							
							drug molecules.							

to the national, all needs	To the y/ ment	to the Ethics, Human ronment ility	
Relevance ocal, j egional and levelopment	Relevance Employabilit Entrepreneu Skill Develop	Relevance Professional Gender, & Sustainabi SDG	IEP OE/4 <sup>th</sup> IR



BP4 03T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Knowledge about physicochemical properties colloidal dispersions enables pharmaceutical professionals to develop effective drug delivery systems, improve drug stability and bioavailability.			Knowledge about the physicochemical properties of colloidal dispersions skill development in areas of optimal drug delivery systems, and contribute to the advancement of pharmaceutical technologies and patient care.	•				SDG 3 SDG 9	Professi onal Educati on (17.1- 17.5)	Technical Skills that match Industry Needs/ Skill Develop ment
Unit II		-	-	Knowledge about rheology enables understanding of flow behavior, stability, and bioavailability of pharmaceutical formulations globally.			Knowledge about rheology enhances skills in formulation development, process optimization, and quality control, enabling professionals to design effective drug delivery systems and ensure product stability and performance					SDG 3 SDG 9	Professi onal Educati on (17.1- 17.5)	Technical Skills that match Industry Needs/ Skill Develop ment



Unit	-	-	Learning the	Understanding the	SDG	Professi	Technical
III			physicochemical	physicochemical properties	3	onal	Skills that
			properties of coarse	of coarse dispersion	SDG	Educati	match
			dispersion is crucial for	develops skills in	9	on	Industry
			understanding and	formulating stable		(17.1-	Needs/
			optimizing the	suspensions and emulsions,		17.5)	Skill
			formulation and delivery	optimizing drug delivery		,	Develop
			of suspensions,	systems, and ensuring			ment
			emulsions, and other	proper dosage			
			coarse dispersions,	administration, thereby			
			ensuring effective drug	enhancing expertise in			
			delivery and stability of	pharmaceutical formulation			
			pharmaceutical products	development and product			
			r ····································	quality control			
Unit	-	-	Learning the concept of	Understanding the concept	SDG	Professi	Technical
IV			micrometrics in is crucial	of micrometrics in	3	onal	Skills that
			for understanding and	pharmaceutical sciences	SDG	Educati	match
			controlling particle size,	develops skills in particle	12	on	Industry
			shape, and surface	characterization,		(17.1-	Needs/
			properties, enabling	formulation optimization,		17.5)	Skill
			formulation optimization	and drug delivery system			Develop
			and efficient drug	design, enhancing expertise			ment
			delivery systems,	in quality control and			
			ensuring product efficacy	process development for			
			and patient safety.	effective pharmaceutical			
				products.			
Unit			Having knowledge about	Having knowledge about	SDG	Professi	Technical
v			drug stability is crucial	drug stability develops	3	onal	Skills that
			for formulating safe and	skills in formulating stable	SDG	Educati	match
			effective pharmaceutical	and reliable pharmaceutical	9	on	Industry
			products, ensuring their	products, conducting		(17.1-	Needs/
			quality and shelf life, and	quality control tests to		17.5)	Skill
			minimizing the risk of	assess stability, and			Develop
			drug degradation and loss	implementing strategies to			ment
			of potency. It enables	mitigate degradation risks,			
			regulatory compliance	enhancing expertise in			



and supports patient safety by providing	ensuring product quality and patient safety.
reliable and stable medications.	

Unit	Relevance developmen			al, regional and glo	Empl Entre	/ance loyability/ epreneursh lopment	To the ip/ Skill	Relevance Professiona Gender, H Environmer Sustainabili	Human nt	Ethics,	SD G	NE P	POE/4 <sup>th</sup> IR
BP40 4T	Local	Regio nal	National	Global	Em ploy abil ity	Entrepr eneursh ip	Skill Developme nt						



Unit I		Student will able to understand General Pharmacology special context Pharmacokinetics which will help to understand disease mechanism and drug action	Pharmacolo gy as a discipline has significantl y contributed to skill developme nt in	(SD G(9.1- 9.3)Global Educati4.4)on Knowle dge, Skill Develop ment, Employ ability
Unit II	-	Student will able to know general pharmacology is crucial for ensuring the safe, effective, and rational use of drugs globally. It informs drug regulation, promotes rational drug use, contributes to pharmacovigilance efforts, supports global health initiatives, informs pharmacoeconomic evaluations, and fosters international collaborations and research in pharmacology.	various aspects of drug therapy. It has provided the knowledge, education, and training necessary for healthcare professiona ls to understand	(SD (9.1- Global G 9.3) Educati 4.4) on Knowle dge, Skill Develop ment, Employ ability
Unit III		The global impact of drugs targeting the peripheral nervous system is vast, with applications in treating autonomic disorders, anesthesia, neuromuscular disorders and research, allowing healthcare professionals to optimize patient outcomes	drug actions, make informed therapeutic decisions, ensure drug safety, and contribute to patient	(SD G 4.4)(9.1- 9.3)Global Educati on Knowle dge, Skill Develop ment, Employ ability



	by leveraging their pharmacological properties.	care. Skill developme nt in pharmacolo gy continues			
Unit IV	 The pharmacology of drugs acting on the central nervous system has profound various global applications such as neurological and psychiatric disorders, pain management sleep disorders, substance abuse, neuro-protection	through lifelong learning and interdiscipli nary collaboratio n, enabling professiona ls to adapt	(SD G 4.4)	(9.1- 9.3)	Global Educati on Knowle dge, Skill Develop ment, Employ ability
Unit v	The global impact of drugs acting on the central nervous system is vast, addressing neurological and psychiatric disorders	to new developme nts and improve patient outcomes.	(SD G 4.4)	(9.1- 9.3)	



Unit	Relevance to the local, national, regional and global developmental needs	Relevance to the local, national, regional and global developmental needs				Entrepreneurship/ Skill Development	1	Relevance to the Professional Ethics, Gender, Human Values, Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP4 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skills	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Introdu ction to Pharma cognos y & Phytoch emistry			Skills related to Pharmacog nosy & Phytochemi stry fields would be developed			B ett er Q ua lit y of he rb al Dr ug		Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Technic al Skills that match Industry Needs, Skill Develop



							S				ment
Unit	_	-	-	Knowle		Skills	E	3	Skill	Prof	Global
Π				dge of		related to		tt	s for	essi	Educati
				cultivati		production	e		Dec	onal Edu	on Knowle
				on, collecti		and storage of herbal	y e		ent Wor	catio	dge
				on,		drugs	d		k	n	Technic
				processi		would be			(SD	(17.	al Skills
				ng &		enhanced			G	1-	that
				storage					4.4)	17.5	match
				of crude drugs						)	Industry Needs,
				urugs							Skill
											Develop
											ment
Unit	-	-	-	knowle		Skills	E		Skill	Prof	Global
III				dge of		related to production	n in		s for Dec	essi onal	Educati
				plant tissue		of plants		n	ent	Edu	on Knowle
				culture		through		n	Wor	catio	dge
						tissue	e	n	k	n	Technic
						culture	t		(SD	(17.	al Skills
						technique		0	G	1- 175	that
						would be enhanced.		IS r	4.4)	17.5	match Industry
						cillianceu.	e v	a		)	Needs,
								io			Skill
							n	L			Develop
											ment
Unit	-	-	-	Role of		Skills		l'r	Skill	Prof	Global
IV				Pharma		related to principle	a i	d ti	s for Dec	essi onal	Educati on
				cognos		principle	1		Dec	onai	011



Linit	y in allopath y and traditio nal systems of medicin e knowle	and practice of traditional medicines would be developed Skills	on al kn o wl ed ge	ent Wor k (SD G 4.4)	n (17. 1- 17.5 )	Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment Global
Unit v	knowle dge of various categori es of seconda ry metabol ites	Skills related to production and usage of secondary metabolites would be enhanced	N e w er dr ug s fr o m na tu ral re so ur ce s	Skill s for Dec ent Wor k (SD G 4.4)	Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment



Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/ Entrepreneurship/ Skill Development	4		÷	Professional Ethics, Gender, Human	Values, Environment	× Dustamanuty	SDG	NEP	POE/4 <sup>th</sup> IR
BP406 P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	To synthesise API to meet Nation need	To synthesise API for export purpose	-	-	Synthesis of Drugs and Intermediate helps to meet industry demand in production of API	-	-	-		Skills for Decent Work (SDG 4.4), Ensure sustainable consumption and production patterns (SDG 12)	Technical Skills that match Industry Needs	Employ ability



Unit II	-	To Perform Quality control of marketed formulation s	the import	-	-	Assay of Drugs helps in Quality control of Drugs	-	-	-	-	Skills for Decent Work (SDG 4.4)	Practical Courses from Industry/Alumni	Skill Develop ment, Employ ability
Unit III	-	To determine Physicoche mical properties require in Research and developme nt Department of PharmaInd ustries.		-	-	Determination of physicochemical properties of Drugs assist in Preformulation studies	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High- quality research (18.1-18.9), Practical Courses from Industry/Alumni	Skill Develop ment, Employ ability

Unit the copal copact	the the	the hics, man nent			
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nce 1 an	nce renet	nce iional			<sup>h</sup> IR
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BP407P														
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				By providing essential knowledge and approaches for recognising and understanding the physical properties of particulate materials, such as particle size, shape, surface area, and porosity, micromeritics contributes to society as a whole. This information is crucial for the creation and optimisation of a wide range of products and processes in industries including medicine, chemicals, and materials science, where innovation is promoted and product performance is enhanced on a worldwide scale.	-	-	Micromerit ics assists in the developme nt of professiona l skills by instructing professiona ls in particle characteriz ation techniques, data interpretati on, and particulate material optimisatio n. These	-	-	-	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



						skills allow individuals to participate in process optimisatio n, quality assurance, and product developme nt Mastering these skills enables professiona ls to address complex formulation challenges and drive innovation							
						in various							
<b>II II</b>						industries.					01.11	D	<u>C1 1 1</u>
Unit II	-	-	-	Through a greater understanding of flow behaviour and viscosity		Rheology fosters	-	-	-	-	Skill s for	Pro moti	Global Educati
				management, rheology makes a		expertise in					s for Dec	mou ng	on
				contribution to the world by		measuring					ent	Hig	Knowle
				enhancing the design and		and					Wor	hj-	dge
				performance of many items and		interpreting					k	qual	
				activities, including paints,		flow					(SD	ity	
				cosmetics, food, and oil drilling.		behaviour,					G	rese	
				It provides effective production,		viscosity,					4.4)	arch	
				quality control, and optimisation,		and						(18.	
				which promotes improved		deformatio						1-	



	product development and global economic progress.	n properties of materials, enabling professiona ls in sectors like cosmetics, polymers, and pharmaceut icals to optimise formulation s, solve problems, and invent with advanced materials, improving their career prospects and industry contributio ns.						18.9	
Unit III	 In order to improve the functionality, appearance, and performance of diverse products including paints, coatings, and emulsions, coarse dispersions enable the integration of insoluble or immiscible components.	The ability - to specialise in methods including mixing, emulsificati on, and particle size	-	-	-	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch	Global Educati on Knowle dge



		1			1						1
				reduction						(18.	
			t	hrough						1-	
				coarse						18.9	
			C	dispersion						)	
			8	allows							
			r	professiona							
				s to							
				advance							
				heir							
				knowledge							
				of							
				formulation							
				creation							
				and process							
				optimisatio							
				n. By							
				mastering							
				hese							
				abilities,							
				people can							
			4	deuple call							
				develop a							
				variety of							
				ndustries							
				and							
				contribute							
				to the							
				productive							
			I	production							
				of high-							
			C	quality							
				goods.							
Unit IV -	- By facilitating the administration	-  -	- I	Micromerit	-	-	-	-	Skill	Pro	Global
	of poorly soluble medications		i	cs assists					s for	moti	Educati
	and increasing their		i	n the					Dec	ng	on
	bioavailability and therapeutic		Ċ	developme					ent	Hig	Knowle
	potency, colloidal dispersions			nt of					Wor	hj-	dge



r	1	 r		· · ·	1
	benefit society as a whole.	professiona	k	qual	
	Additionally, colloidal	l skills by	(SD	ity	
	dispersions are used in a variety	instructing	G	rese	
	of industries, such as food,	professiona	4.4)	arch	
	cosmetics, and electronics, which	Îs in	, í	(18.	
	promotes global technical	particle		1-	
	development and economic	characteriz		18.9	
	expansion.	ation		)	
	expansion.	techniques,		'	
		data			
		interpretati			
		on, and			
		particulate			
		material			
		optimisatio			
		n. A			
		person's			
		career			
		prospects			
		and			
		industry			
		contributio			
		ns are			
		improved			
		by their			
		ability to			
		contribute			
		to product			
		developme			
		nt, quality			
		assurance,			
		and process			
		optimisatio			
		n. They are			
		used in			
		industries			



				including materials engineering , cosmetics, and medicines.					
Unit v		Drug stability makes a difference by preserving the quality, safety, and efficacy of pharmaceutical products over the course of their shelf lives. It makes it possible for people all over the world to have access to safe and effective pharmaceuticals, encourages regulatory compliance, and supports global standards, ultimately leading to an improvement in patient outcomes and public health globally.		By giving professiona ls information and competence in stability testing procedures, degradation mechanism s, and formulation optimisatio n, understandi ng medication stability aids in the developme nt of professiona l skills. These talents help individuals to improve their capabilities		No	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



			and			
			contributio			
			ns to the			
			industry by			
			ensuring			
			product			
			quality,			
			resolving			
			stability			
			problems,			
			and making			
			wise			
			decisions in			
			pharmaceut			
			ical			
			research			
			and			
			developme			
			nt			



BP4 08P	Unit
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employability/ Entrepreneurship/ Skill Development
Entrepreneurship	
Skill Development	
Professional Ethics	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability
Gender	
Human Values	
Environment & Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit I			Pre- clinical studies are conduct ed worldw ide, and trained the students	In experiment al pharmacolo gy, covers the basic concepts of animal laboratories animals commonly instruments used thus helps in Skill developme nt	Skill develop ment		Skill s for Dec ent Wor k (SD G 4.4) Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Skill Develop ment
Unit II	-	-	In this, pharma cology instrum ets are discuss ed with basic principl e and workin g, enabled the students to fit for the	This unit based commonly instrument and their application on research and developme nts and this helps in kill developme nt	Skill develop ment			Prof essi onal Edu catio n (17. 1- 17.5 )	Employ ability



			professi				
			onal				
			workfor				
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			globally				
Unit	-	-	Globall	In this,			Skill
III			у,	students			Develop
			y, Blood	learned and			ment
			withdra	trained with			
			wal,	Blood			
			serum	withdrawal,			
			and	serum and			
			plasma	plasma			
			separati	separation,			
				anesthetics			
			on, anesthet	and			
				euthanasia			
			ics and				
			euthana	techniques			
			sia	used for			
			techniq	animal			
			ues	studies			
			used in				
			researc				
			h and				
			develop				
			ment in				
			the				
			clinical				
			and pre				
			clinical				
			studies				
Unit	-	_	Globall	In this,			Skill
IV			* 7	students			Develop
11			y , Glauco	will learn			ment
				about the			ment
			ma,				
			cataract	different			



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		and	drugs				
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		eye	and their				
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		s are	rabbit eye				
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		ng to					
		many					
		folds,					
		thus					
		trained					
		the					
		students					
		and					
		make					
		them					
		availabl					
		e as					
		skilled					
		researc					
		hers					
Unit		Globall	In skeletal		Skill	Prof	Employ
v			muscle		s for	essi	ability
·		y, Skeletal	relaxants		Dec	onal	uomey
		Muscle	using rota-		ent	Edu	
		S	rod		Wor	catio	
		disorder	apparatus		k	n	
		s over	experiment		(SD	(17.	
		the			G	1-	
		age,thei	, students will learn		4.4)	17.5	
		r	the		<i>+</i> )	)	
		pathoge	neurophar			'	
		nesis,					
		and	macology				
			and helps in skill				
		challen					
		ges to	developme				



		overco	mt				
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		s and					
		develop					
		ment in					
		the					
		clinical					
		and pre					
		clinical					
		studies					

Unit	to the national, d global al needs al needs	To the ty/ rrship/ pment	to the Ethics, Human ironment ility	
	televance ocal, egional and evelopment	kelevance mployabilit intrepreneui kill Develop	Relevance Professional Gender, Values, Envi & Sustainabi	DG (EP OE/4 <sup>th</sup> IR



BP4 09P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I		-	-	Globalll y it will in underst anding the various modern analytic al techniq ues to authenti cate and quality control of crude drugs.	-	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Skill for dece nt wor k (SD G 4.4)	Prof essi onal educ atio n (17. 1- 17.5 )	Global educatio n knowled ge



Unit II	-	-	-	-	_	Medicin al and aromatic plants is an approac h of developi ng human resource and train	To know the evaluation techniques for the herbal drugs	-	_	_	-	Qual ity prim ary/s econ dary educ ation for all (SD G	Prof essi onal educ atio n (17. 1- 17.5 )	Technic al skills that match Industry needs
Unit III	-	-	-	-	phar mac	the youth for.	to know the crude	-	-	-	-	4.1) Skill for	Adu lt educ	Global educatio
					ogn osy help to test,		drugs, their uses and chemical nature					dece nt wor k (SD	atio n and lifel	n knowled ge
					defi ne, and crea te							G 4.4	ong lear ning (21. 1-	
					nov el med icati								21.1 0)	
					ons for the treat men									



					t of hum an illne ss									
Unit IV	-	-	-	Globalll y it will in underst anding the various modern analytic al techniq ues to authenti cate and quality control of crude drugs.	-	-	to know the techniques in the cultivation and production of crude drugs	-	_	_	-	Qual ity prim ary/s econ dary educ ation for all (SD G 4.1)	Equi table and Incl usiv e Edu catio n: Lear ning for all (6.1- 6.20 )	Technic al skills that match Industry needs
Unit v	-	-	-	-	-	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Skill for dece nt wor k (SD G 4.4	Adu lt educ atio n and lifel ong lear ning (21. 1-	Global educatio n knowled ge



													21.1 0)	
Unit VI	-	-	-		-	-	to understand the microscopi c and morphologi cal evaluation of crude drugs	-	-	-	-	Qual ity prim ary/s econ dary educ ation for all (SD G 4.1)	essi onal educ atio n (17.	Global educatio n knowled ge
Unit VII	-	-	-	Globalll y it will in underst anding the various modern analytic al techniq ues to authenti cate and quality control of crude drugs.	-	-	To know the evaluation techniques for the herbal drugs	-	_	-	-	Skill for dece nt wor k (SD G 4.4)	Adu lt educ atio n and lifel ong lear ning (21. 1- 21.1 0)	Global educatio n knowled ge



Unit VIII	-	-	-	Pharma	-	-	to know the crude	-	-	-	-	Qual ity	Equi table	Global educatio
				cognos			drugs, their					prim	and	n
				y is			uses and					ary/s	Incl	knowled
				used by			chemical					econ	usiv	ge
				pharma			nature					dary	e	
				ceutical								educ	Edu	
				compan								ation	catio	
				ies to								for	n:	
				test,								all	Lear	
				charact								(SD	ning	
				erise,								G	for	
				and								4.1)	all	
				develop									(6.1- 6.20	
				new drugs									0.20	
				for the									)	
				treatme										
				nt of										
				human										
				sicknes										
				S										
Unit	-	-	-	It will	-	-	to know the	-	-	-	-	Skill	Adu	Technic
IX				help			techniques					for	lt	al skills
				people			in the					dece	educ	that
				compre			cultivation					nt	atio	match
				hend			and					wor	n	Industry
				the			production					k	and	needs
				many			of crude					(SD	lifel	
				contem			drugs					Ġ	ong	
				porary								4.4)	lear	
				analytic									ning	
				al									(21.	
				approac									1-	
				hes to									21.1	
				authenti									0)	



				cate and control the quality of crude pharma ceutical s on a global scale.										
Unit X	-	-	-	Globalll y it will in underst anding the various modern analytic al techniq ues to authenti cate and quality control of crude drugs.	-	-	to understand the microscopi c and morphologi cal evaluation of crude drugs	-	-	-	-	Qual ity prim ary/s econ dary educ ation for all (SD G 4.1)	Equi table and Incl usiv e Edu catio n: Lear ning for all (6.1- 6.20 )	Technic al skills that match Industry needs



Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human Values. Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP5 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Antihist aminic agents and anti- cancer agents are used globally to tackle the menace	The prod ucti on of thes e drug s c an gen erat e a	-	The production and quality control of these drugs helps in developing and honing technical skills.	Usage and quality control of these drugs requires a lot of professio nal ethics	T he se	-	-	Thes e type s of drug s ensu re healt hy lives and pro	-	The producti on and quality control of these drugs helps in developi ng a lot of technica l skills



			of cancer , allergie s ,cold cough etc.	lot of emp loy men t.				ed fo r ev er y ty pe of ge nd er		mote s well bein g of peop lesac ross all ages .SD G3	and generati ng a lot employ ment across the globe.
Unit II	-	-	Anti- anginal and anti- hyperte nsive drugsar e used globally to tackle the attack of angina and blood pressur e.	The prod ucti on of thes e drug s c an gen erat e a lot of emp loy men t.	-	The production and quality control of these drugs helps in developing and honing technical skills.	Usage and quality control of these drugs requires a lot of professio nal ethics	T he se ty pe s of dr ug s ar e us ed fo r ev er y ty pe of ge	-	Thes e type s of drug s ensu re healt hy lives and pro mote s well bein g of peop lesac ross all ages	The producti on and quality control of these drugs helps in developi ng a lot of technica l skills and generati ng a lot employ ment across the globe.



									nd er			.SD G3		
Unit III			-	Anti- arrhyth mic and anti- hyperli pidemic drugs used globally to treat the arrhymi a and high chloeste rol disorder s.	The prod ucti on of thes e drug s c an gen erat e a lot of emp loy men t.	-	The production and quality control of these drugs helps in developing and honing technical skills.	Usage and quality control of these drugs requires a lot of professio nal ethics	T he se ty pe s of dr ug s ar e us ed fo r ev er y ty pe of ge nd er		-	Thes e type s of drug s ensu re healt hy lives and pro mote s well bein g of peop lesac ross all ages .SD G3	-	The producti on and quality control of these drugs helps in developi ng a lot of technica 1 skills and generati ng a lot employ ment across the globe.
Unit IV	-	-	-	Steroid al and thyroid drugs are used globally	The prod ucti on of thes	-	The production and quality control of these drugs helps in	Usage and quality control of these drugs	T he se ty pe s	-	-	Thes e type s of drug s	-	The producti on and quality control of these

				as	0		developing	requires a	of			oncu		drugs
				contrac	e drug		and honing	lot of	dr			ensu re		helps in
				eptives	s c		technical	professio				healt		developi
				, as	an		skills.	nal ethics	ug s			hy		ng a lot
				, as anti-	gen		51115.	nai cuncs	s ar			lives		of
				inflam	erat			•				and		technica
									e					1 skills
				matory	e a lot				us			pro		and
				agents and also	of				ed fo			mote		
												S		generati
				used to	emp				r			well bein		ng a lot
				cure	loy				ev					employ
				thyroid	men				er			g of		ment
				cancer.	t.				У			peop		across
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									pe			ross		globe.
									of			all		
									ge			ages .SD		
									nd			.SD G3		
I In:4				A	The		The	Usess	er T			Thes		The
Unit	-	-	-	Anti - diabetic	The	-		Usage		-	-		-	
v					prod		production	and	he			e		producti
				and	ucti		and quality control of	quality	se			type		on and
				local	on of			control of	ty			s of		quality
				anaesth			these drugs	these	pe			drug		control
				etics	thes		helps in	drugs	s			S		of these
				drugs	e		developing	requires a	of dr			ensu		drugs
				are used	drug		and honing	lot of				re		helps in
				globally	s c		technical	professio	ug			healt		developi
				to treat	an		skills.	nal ethics	S			hy		ng a lot of
				diabetes	gen			•	ar			lives		
				which	erat				e			and		technica
				is called	e a				us			pro		1 skills
				as a	lot				ed			mote		and
				silent	of				fo			S 11		generati
				killer. Local	emp loy				r ev			well bein		ng a lot employ



	anaesth	men	er	g of	ment
	etics are	t.	У	peop	across
	used to		ty	lesac	the
	provide		pe	ross	globe.
	anaesth		of	all	C
	esia.		ge	ages	
			nd	.SD	
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Unit tional, needs	o the ent	Ethics, Iuman mment		
ce to and nental	ce To ability/ eneursl velopm	ce to onal J Enviro inabilit		IR
Relevan local, developr	Employa Entrepr Skill Dev	Relevan Professi Gender, & Sustai	SDG	VEP POE/4 <sup>th</sup>



BP502T	Local	Regional	Vational	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	<u>-</u>	32 -	<b>T</b> Preformulation studies play a vital role in drug development by investigating the physicochemical properties of drug substances, aiming to understand their behaviour and stability. By providing valuable data and insights, preformulation studies contribute globally to the development of safe and effective pharmaceutical products.	Preformulation studies offer a valuable opportunity for skill development in the pharmaceutical industry, enhancing knowledge and expertise in the characterization and analysis of drug substances, formulation development, and optimization techniques. By actively engaging in preformulation studies,	Er	Sk	- -	-	'HI	- Et	"Ens ure healt hy lives and pro mote well - bein g for all at all ages (SD G 3) "	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



		individuals can acquire practical skills that are highly relevant for a successful career in pharmaceutical research and development.						
Unit II -	- Tablets contribute globally by providing a convenient, portable, and easily administered dosage form, facilitating widespread access to medication and improving patient compliance, thereby positively impacting public health on a global scale.	contribute to employability by providing a platform for organizing and presenting information in a structured manner, enabling individuals to showcase their skills, qualifications, and experiences effectively.	Tablescansupportentrepreneurshipby aidinginbusinessplanning,financialanalysis,and dataorganization,empoweringentrepreneursuskeinformeddecisions,communicate theirideas, anddrive thegrowth oftheirventures.		N - D	"Ens ure healt hy lives and pro mote well - bein g for all at all ages (SD G 3) "	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Global Educati on Knowle dge



Unit III	-	-	-	Liquid orals contribute	Liquid	-	-	Ν	-	"Ens	Pro	
				globally by providing a	orals			0		ure	moti	Global
				more accessible and	contribute					healt	ng	Educati
				user-friendly	to					hy	Hig	on
				medication option,	entrepren					lives	hj-	Knowle
				especially for	eurship					and	qual	dge
				vulnerable populations	by					pro	ity	
				like children and the	offering					mote	rese	
				elderly. Their ease of	opportunit					well	arch	
				administration and	ies for					-	(18.	
				accurate dosing	formulati					bein	1-	
				improve patient	on					g for	18.9	
				compliance, leading to	developm					all at	)	
				better health outcomes	ent,					all		
				worldwide.	product					ages		
					innovatio					(SD		
					n, and					G 3)		
					niche							
					market							
					creation,							
					allowing							
					entrepren							
					eurs to tap							
					into the							
					growing							
					demand							
					for liquid							
					medicatio							
					ns and							
					establish							
					their own							
					pharmace utical							
					ventures.							



Unit IV				Capsules contribute	Capsules	-	-	-	-	Ν	-	"Ens	Pro	Global
				globally by providing	contribute to					0		ure	moti	Educati
				an efficient and	employability by							healt	ng	on
				versatile dosage form,	creating job							hy	Hig	Knowle
				allowing for precise and	opportunities in							lives	hj-	dge
				convenient drug	pharmaceutical							and	qual	C
				delivery. They offer	manufacturing,							pro	ity	
				flexibility in	formulation							mote	rese	
				formulation, ease of	development,							well	arch	
				swallowing, and	quality control,							-	(18.	
				compatibility with	and regulatory							bein	1-	
				various active	affairs, requiring							g for	18.9	
				ingredients,	specialized skills							all at	)	
				contributing to global	and expertise. The							all		
				access to medication	widespread use of							ages		
				and improved patient	capsules also							(SD		
				compliance.	increases demand							G 3)		
				-	for professionals							"		
					in sales,									
					marketing, and									
					distribution,									
					further enhancing									
					employability in									
					the pharmaceutical									
					industry.									
Unit v	-	-	-	They play a critical role	The specialized	-	-	-	-	Ν	-	"Ens	Pro	Global
				in emergency care,	knowledge and					0		ure	moti	Educati
				disease treatment, and	expertise required							healt	ng	on
				patient management,	in parenteral							hy	Hig	Knowle
				thereby improving	preparation offer							lives	hj-	dge
				healthcare outcomes on	diverse career							and	qual	
				a global scale.	prospects in							pro	ity	
					pharmaceutical							mote	rese	
					manufacturing,							well	arch	
					clinical research,							-	(18.	
					and healthcare							bein	1-	



settings, enhancing employability in the pharmaceutical industry.	g for 18.9 all at ) all ages (SD
industry.	(SD G 3) "

O the ational, global I needs	o the / ship/ nent	o the Ethics, Human onment ty	
nce to na na na na na na na na na	nce T /a bility/ reneurs evelopn	ional Envirce to Envirce	IR
Relevan local, regional developi	Employ Entrepi Skill De	Relevar Profess Gender & Susti & Susti	NEP POE/4 <sup>ti</sup>



BP5 03T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Studies related to the mechanism of drug action and its relevance in the treatment of diseases related to cardiovascular system	-	-	Understanding basics of drug related to cardiovascular system	<u>I</u>	-	<u> </u>	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit II	-	-	-	Emphasize on general principles related to drugs used in therapy of shock, hemtinics, coagulants, anticoagulants, fibrinolytics, anti-platelet and plasma volume expanders as well as on urinary system	-	-	The basic pharmacology of drug therapy of shock, hemtinics, coagulants, anticoagulants, fibrinolytics, anti- platelet and plasma volume expanders as well as on urinary system	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge



Unit III		-	-	Studies related to autocoids and related drugs plays an important role in creating awareness on mechanism and pharmacological action of these drugs	Understanding basics of drug related to autocoids and related drugs	_	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and	atio n(17	Global educatio n knowled ge
										Skills for Decent Work SDG 4.4	)	
Unit IV	-	-	-	Emphasize to drugs acting on endocrine system plays an important role in creating awareness on mechanism and pharmacological action of drugs	Understanding basics of drug acting on endocrine system	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit v	-	-	-	Understanding of general principles, applications and principles related to bioassay	To understand the basic knowledge related to bioassay	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge



Unit	Relevance to the local, national, regional and global developmental needs	regional and globs developmental needs				Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human Values Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP5 04T	Local	Regional	National	Global	Employability	Entrepreneurship	Skills	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Knowle dge of Formati on of Second ary metabol ites			Skills enhanced with respect to production of secondary metabolites			M ed ici na l V al ue		Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Technic al Skills that match Industry Needs, Skill Develop



										ment
Unit II	_	-	-	Knowle dge of Medici nal importa nce of Second ary metabol ites		Skills enhanced with respect to usage of secondary metabolites	M ec ic na l V al uc	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment
Unit III	-	-	-	Knowle dge of Isolatio n, Identifi cation and analysis of phytoco nstituen ts		Skills enhanced with respect to usage of phytoconsti tuents	M ec ic na l V al uc	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment
Unit IV	-	-	-	Knowle dge of Industri		Skills enhanced with	M ec ic	Skill s for Dec	Prof essi onal	Global Educati on



		al	respect to	na	ent	Edu	Knowle
		product	Industrial	1	Wor	catio	
		ion of	production	I	k	n	Technic
		Phytoco	of		K (SD	(17.	al Skills
		nstituen		m	G	1-	that
			secondary	ро			
		ts	metabolites	rta	4.4)	17.5	match
				nc		)	Industry
				e			Needs,
							Skill
							Develop
							ment
Unit		knowle	Skills	Μ	Skill	Prof	Global
v		dge of	enhanced	ed	s for	essi	Educati
		modern	with	ici	Dec	onal	on
		method	respect to	na	ent	Edu	Knowle
		of	Extraction	1	Wor	catio	dge
		extracti	of	V	k	n	Technic
		on &	secondary	al	(SD	(17.	al Skills
		analysis	metabolites	ue	Ġ	1-	that
		of			4.4)	17.5	match
		Phytoco			,	)	Industry
		nstituen				/	Needs,
		ts					Skill
		10					Develop
							-
							ment



Unit	Relevance to the local, national, regional and global developmental needs				To llity/ eurship/ lopment		Relevance to the Professional Ethics, Gender, Human Values, Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR	
BP5 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I			To regulate the import, manufacture, distribution and sale of drugs & cosmetics through licensing.Manufacture, distribution and sale of drugs and cosmetics by qualified persons only. To prevent substandard in drugs, presumably for maintaining high		Pharmaceutical jurisprudence provides professionals with valuable legal and regulatory knowledge, enhancing employability in various sectors of the pharmaceutical			The integratio n of pharmace utical jurisprud ence and professio nal ethics enhances employa bility by equippin				(SD G 1.2, 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 ), Tran sfor min	Employ ability, Global Educati on Knowle dge, Technic al Skills that match Industry



		standards of medical	industry.	σ	g	Needs
		treatment.	Understanding	g individua	the	rteeds
		treatment.	the legal	ls with	Reg	
			frameworks,	the	ulat	
			compliance	knowled	ory	
Unit	_	Packaging and	requirements,		Syst	
II		labelling directly	and ethical	ge, skills, and	-	
11		impact sales and			em	
		profits as they offer	considerations	values	(20.	
		detailed information	within the field	necessary	1-	
		on the price, quality,	positions	to make	20.1	
			individuals for	ethical	5)	
		quantity, usage,	success in roles	decisions		
		ingredients, and features of the	that require	, comply		
			adherence to	with		
		products. They also	regulations,	regulatio		
		display the brand logo	protection of	ns, and		
		and message that help	intellectual	prioritize		
		the customer find the	property, and	patient		
		product easily by	ethical decision-	welfare.		
		creating a recall value.	making.	Employe	_	
Unit	-	An Act to regulate the		rs seek		
III		profession of		professio		
		pharmacy. Whereas it		nals who		
		is expedient to make		can		
		better provision for the		navigate		
		regulation of the		the		
		profession and practice		complex		
		of pharmacy and for		ethical		
		that purpose to		landscap		
		constitute Pharmacy		e of the		
		Councils".		pharmace		
Unit	-	The global impact of		utical		
IV		these acts and		industry,		
		regulations lies in		building		
		promoting public		trust, and		
		health, ensuring the				



	safety and efficacy of		maintaini		
	pharmaceutical		ng high		
			standards		
	products, protecting		of		
	animal welfare, and				
	enhancing access to		professio		
	essential medicines.		nalism.		
	They establish				
	guidelines and				
	standards that				
	influence healthcare				
	practices, research				
	ethics, and pricing				
	policies not only				
	within the country of				
	origin but also				
	potentially in				
	international contexts.				
	These regulations				
	contribute to the				
	overall well-being of				
	individuals, animals,				
	and healthcare systems				
	globally.				
Unit	The global impact of				
v	these legislations is				
·	significant. They				
	ensure the safety,				
	quality, and				
	accessibility of				
	pharmaceutical				
	products, promote				
	ethical practices,				
	1				
	protect patient rights, influence healthcare				
	policies, and stimulate				
	research and				



r T	velopment in the armaceutical sector. ese legislations	
	althcare outcomes,	
	novation, and the	
	erall well-being of	
i	lividuals globally.	

Unit			Relevance to the local,	national, regional and	development	al needs		Relevance	To the Employabili	ty/ Entrepreneu	rship/ Skill Developmen			Gender,	Human Values.	Taritoninon	SDG			NEP	POE/4 <sup>th</sup> IR
BP5 06P	Local Regional	National			Global			Employability				Entrepreneurship	Skill Development	Protessional Etnics Gender	Values	Environment & Sustainability					
Unit-				ormulat	ion	studies	Preform										SDG 3: Good		and	Promoti	Sk
I:			play	a vita	l role	in drug	a valual				-		-		-	-	Well-being:	Paren	teral	ng	ill
1.				lopmer		by	skill de		ent i	in the							formulations,	such	as	High-	E
Prefo			inve	stigatin	g	the	pharmac	eutical	in	dustry,							injections and	infusi	ons,	quality	mb



rmul ation studi es on parac etam ol/as parin /or any other drug	physicochemical properties of drug substances, aiming to understand their behaviour and stability. By providing valuable data and insights, preformulation studies contribute globally to the development of safe and effective pharmaceutical products.	enhancing knowledge and expertise in the characterization and analysis of drug substances, formulation development, and optimization techniques. By actively engaging in preformulation studies, individuals can acquire practical skills that are highly relevant for a successful career in pharmaceutical research and development.				play a critical role in delivering medications and treatments for various health conditions. They help ensure access to essential medicines and healthcare, contributing to the goal of achieving good health and well-being for all.	(18.1- 18.9) [Rheolo gy being a importa nt compon ent in formulat ion develop ment leads to conducti on of research work]	ed de d Co urs es De vel op me nt
Unit II: 1. Prep arati on and evalu ation of Para ceta mol table	 Tablets contribute globally by providing a convenient, portable, and easily administered dosage form, facilitating widespread access to medication and improving patient compliance, thereby positively impacting public health on a global scale.	Tables can contribute to employability by providing a platform for organizing and presenting information in a structured manner, enabling individuals to showcase their skills, qualifications, and experiences effectively.	Tablescansupportentrepreneurshipbyaidinginbusiness planning,financial analysis,anddataorganization,empoweringentrepreneursentrepreneurstomakeinformeddecisions,communicate theirideas,anddrive	-	 _	<ul> <li>SDG 3: Good Health and Well-being: Parenteral formulations, such as injections and infusions, play a critical role in delivering medications and</li> <li>treatments for various health conditions. They help ensure access to essential medicines and healthcare, contributing to the goal of achieving good health and well-being for all.</li> </ul>	Promoti ng High- quality research (18.1- 18.9) [Rheolo gy being a importa nt compon ent in	Sk ill E mb ed de d Co urs es De vel op me



ts	I	the growth of their			formulat	nt
ts 2. Prep		ventures.			ion	m
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mark eted table ts Unit III:									
1. Prep arati on and evalu ation of Tetra cycli ne caps ules 2. Qula ity contr ol test of (as per IP) mark eted caps	 Capsules contribute globally by providing an efficient and versatile dosage form, allowing for precise and convenient drug delivery. They offer flexibility in formulation, ease of swallowing, and compatibility with various active ingredients, contributing to global access to medication and improved patient compliance.	The Unit III is responsible for the preparation and evaluation of Tetracycline capsules, ensuring their quality and compliance with established standards. The quality control tests performed on marketed capsules help assess their employability and suitability for use in clinical practice.	-	-	 -	_	SDG 9: Industry, Innovation, and Infrastructure: The development and production of parenteral formulations require robust pharmaceutical industry infrastructure and innovative manufacturing processes. Meeting the demand for parenteral formulations can drive technological advancements, promote research and development, and enhance manufacturing capabilities, thereby contributing to SDG 9.	Promoti ng High- quality research (18.1- 18.9) [Rheolo gy being a importa nt compon ent in formulat ion develop ment leads to conducti on of research work]	Sk ill E mb ed de d Co urs es De vel op me nt



ules						
Unit IV: 1. Prep arati on of Calci um Gluc onate injec tion 2. Prep arati on of Asco rbic Acid injec tion 3. Prep arati on of Eye drop s/ and Eye oint ment	The global need for the preparation of eye drops and eye ointments is driven by the necessity to provide appropriate and effective treatments for ocular conditions, thereby improving patient comfort, visual health, and overall quality of life.	Ascorbic Acid injections, and Eye drops/Eye		SDG 3: Good Health and Well-being: Parenteral formulations, such as injections and infusions, play a critical role in delivering medications and treatments for various health conditions. They help ensure access to essential medicines and healthcare, contributing to the goal of achieving good health and well-being for all.	Promoti ng High- quality research (18.1- 18.9) [Rheolo gy being a importa nt compon ent in formulat ion develop ment leads to conducti on of research work]	Sk ill E mb ed de d Co urs es De vel op me nt



s Unit V: 1. Prep arati on of Crea ms (cold / vanis hing crea m) 2. Eval uatio n of Glas s conta iners (as per IP)	Unit V addresses the global need for the preparation of creams (cold/vanishing cream) and the evaluation of glass containers. Professionals trained in these areas contribute to meeting the demand for effective skincare formulations and ensuring the safety and integrity of pharmaceutical products during storage and transportation.	Unit V enhances the employability of individuals by providing them with specialized skills and knowledge in the preparation of creams (cold/vanishing cream) and the evaluation of glass containers. The global need for effective skincare products and reliable pharmaceutical packaging creates numerous employment opportunities in various sectors of the pharmaceutical industry for individuals trained in these areas.			SDG 3: Good Health and Well-being: Parenteral formulations, such as injections and infusions, play a critical role in delivering medications and treatments for various health conditions. They help ensure access to essential medicines and healthcare, contributing to the goal of achieving good health and well-being for all.	Promoti ng High- quality research (18.1- 18.9) [Rheolo gy being a importa nt compon ent in formulat ion develop ment leads to conducti on of research work]	Sk ill E mb ed de d Co urs es De vel op me nt
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Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneursmp/ Skill Development		Relevance to the Professional Ethics,	E	& Sustainability	Γ	SDG	NEP	POE/4 <sup>th</sup> IR
BP5 07P	Local	Regional	National	To focus on studies related	Employability	Entrepreneurship	Kill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability	Skills for	Prof	Global
Unit I	-	-	-	To focus on studies related introduction to in-vitro pharmacology and physiology salt solutions as well as effect of drugs on frog heart, blood pressure and heart rate of dog	-	-	Understanding of basics of in-vitro pharmacology and physiology salt solutions as well as effect of drugs on frog heart, blood pressure and heart rate of dog	-	-	_	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge



Unit II	-	-	-	In elaboration of diuretic activity of drugs using rats/mice as well as DRC of acetylcholine using frog rectus abdominis muscle and effect of physostigmine and atropine on DRC of acetylcholine using frog rectus	-	-	To gain basic knowledge related to different models of DRC	_	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit III		-		To understand the basic studies related to bioassay of histamine using guinea pig ileum by matching method, bioassay of oxytocin using rat uterine horn by interpolation method and bioassay of serotonin using rat fundus strip by three point bioassay			To gain understanding basics of bioassay of histamine, oxytocin and serotonin.	-	_	_	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit IV	-	-	_	It emphasis on studies related to bioassay of acetylcholine using rat ileum/colon by four point bioassay, determination of PA2 value of prazosin using rat anococcygeus muscle and determination of PD2 value using guinea pig ileum.			To understanding basics of bioassay and determination of PA2 and PD2 value using rat anococcygeus muscle and guinea pig ileum.	_	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit v	-	-	-	It elaborates the effect of spasmogens and spasmolytics using rabbit jejunum, anti- inflammatory activity of drugs using carrageenan induced paw-edema model and analgesic activity of drug using central and peripheral			The basic knowledge related to effect spasmogens and spasmolytics and anti-inflammatory and analgesic activity of drug	-	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5	Global educatio n knowled ge



		methods					)	

	BP5 08P	
Local		Relevance to the local, national, regional and global developmental needs
Regional		
National		
Global		
Employability		Relevance To the Employability/
Entrepreneurship	,	Entrepreneurship/ Skill Development
Skill Development		
Professional Ethics		Relevance to the Professional Ethics, Gender, Human Values, Environment
Gender		& Sustainability
Human Values		
Environment & Sustainability		
		SDG
		NEP
		POE/4 <sup>th</sup> IR



Unit I	-	-	-	Identifi cation & extracti on of crude drugs	Skills enhanced with respect to extraction of secondary metabolites	M ed ici na l va lu e	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry Needs, Skill Develop ment
Unit II		-	-	Isolatio n & Identifi cation of phytoco nstituen ts	Skills enhanced with respect to isolation of secondary metabolites	M ed ici na 1 va lu e	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Practica 1 Courses from Industry /Alumni Technic al Skills that match Industry



									Needs, Skill Develop ment
Unit III	-	-	Chroma tograph ic evaluati on of crude drugs		Skills enhanced with respect to chromatogr aphic analysis of crude drugs	M ed ici na l va lu e	Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Global Educati on Knowle dge Practica l Courses from Industry /Alumni Technic al Skills that match Industry Needs, Skill Develop ment

Semester-VI



Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/	Entrepreneurship/ Skill Development		Relevance to the Professional Ethics, Gender, Human Values Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP6 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Antibio tics are used globally to treat lethal infectio ns.	Pro duct ion of anti bioti cs acro ss the glob e	-	Antibiotics developed syntheticall y, helps in honing the technical skill and expertise in production.	Usage of any medicine especiall y antibiotic s is based on appropria te professin onal	A nti bi oti cs ar e us ed fo r ev	-	-	Ensu re healt hy lives for all and at all ages SDG	-	It helps in developi ng technica 1 skills that industry requires .And thus helps in



			prov ides a lot of emp loy men t.			ehics .	er y ty pe of ge nd er		3.	creating employ ment.
Unit II	-	Antibio tics and antimal arial drugs are used globally to treat lethal infectio ns caused by Plasmo dium.	Pro duct ion of anti bioti cs acro ss the glob e prov ides a lot of emp loy men t.	-	Antibiotics developed syntheticall y, helps in honing the technical skill and expertise in production	Usage of any medicine especiall y antibiotic s is based on appropria te professin onal ehics.	A nti bi oti cs an d an ti m al ari al ari al s dr ug s ar e us ed fo r ev	-	Ensu re healt hy lives for all and at all ages SDG 3.	It helps in developi ng technica l skills that industry requires .And thus helps in creating employ ment



			2				er y ty pe of ge nd er			
Uni		Antitub ercular and antivira ldrugs are used globally to treat lethal infectio ns caused by Mycoba cterium tubercul ae and AIDS virus.	Pro duct ion of anti tube rcul ar and anti viral drug s acro ss the glob e prov ides a lot of emp loy men	-	Antitubercu lar and anti viral drugs developed syntheticall y , helps in honing the technical skill and expertise in production	Usage of any medicine especiall y antibiotic s is based on appropria te professin onal ehics	A nti tu be rc ul ar an d an tiv ira 1 dr ug sa re us ed fo r ev er y ty	-	Ensu re healt hy lives for all and at all ages SDG 3.	It helps in developi ng technica 1 skills that industry requires .And thus helps in creating employ ment.



Unit	-	-	-	Anti	t. Pro	-	Anti fungal	Usage of	pe of ge nd er A	-	-	Ensu	-	It helps
IV				fungal drugs are used globally to treat lethal infectio ns caused by various fungus like Candid a and Trichon oma etc.	duct ion of anti fung al acro ss the glob e prov ides a lot of emp loy men t		drugs developed syntheticall y , helps in honing the technical skill and expertise in production	any medicine is based on appropria te professin onal ehics	nti fu ng al dr ug s ar e us ed fo r ev er y ty pe of ge nd er			re healt hy lives for all and at all ages SDG 3.		in developi ng technica l skills that industry requires .And thus helps in creating employ ment.
Unit v	-	-	-	Concep t of Drug design	Dru g desi gnin	-	Docking techniques helps in acing	Drug designing sector is complied	-	-		Ensu re healt hy	-	It helps in developi ng



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Unit	Relevance to the local, national, regional and global developmental needs		1		Relevance To the Employability/	Entrepreneursmp/ Skill Development		Relevance to the Professional Ethics.		& Sustainability		SDG	NEP	POE/4 <sup>th</sup> IR
BP6 02T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	_	To focus on studies related to drugs acting on respiratory system and gastrointestinal tract plays an important role in creating awareness on mechanism and pharmacological action of drugs	-	-	Understanding basics of drug related to respiratory system and gastrointestinal tract	_	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge



Unit II	-	-	-	To emphazise general principles related to chemotherapy and antibiotics	-	-	The basic pharmacology of antibiotics and chemotherapy	-	-	_	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit III		-	-	To understand the studies related to drugs acting on anti-tubercular, anti-leprotic, anti-fungal, anti-viral, anthelmintics, anti-malarial and anti-amoebic agents plays an important role in creating awareness on mechanism and pharmacological action of drugs			Elaboration of basics of drug related to anti- tubercular, anti- leprotic, anti- fungal, anti-viral, anthelmintics, anti-malarial and anti-amoebic agents	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit IV	-	-	-	To emphasize Studies related to drugs acting in urinary tract infections, sexually transmitted diseases and as immunomodulators plays an important role in creating awareness on mechanism and pharmacological action of drugs			Understanding basics of drug related to urinary tract infections, sexually transmitted diseases and as immunomodulato rs	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit v	-	-	-	To gain knowledge related to general principles related to toxicology and chronopharmacology			The basic knowledge related to toxicity studies as well as chronopharmacol ogy	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for	Prof essi onal educ atio n(17 .1-	Global educatio n knowled ge



						Decent Work	17.5	
						SDG 4.4	)	

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National	developmental needs
Global	
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Entrepreneurship	Entrepreneurship/ Skill Development
Skill Development	
<b>Professional Ethics</b>	÷
Gender	Professional Ethics, Gender, Human
Human Values	<b>Envir</b> Inahil
Environment & Sustainability	
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit I			The study of "Herbs as a raw material" provides students with knowledge about the medicinal properties and applications of herbs, enabling them to contribute to the development of natural remedies. Understanding "Biodynamic agriculture" promotes sustainable farming practices, benefiting the environment and human health. Exploring the "Indian system of medicine" offers students insights into traditional healing methods, expanding their understanding of healthcare practices worldwide. Overall, these studies equip students with diverse perspectives and skills for global health and sustainability.	The study of "Herbs as a raw material" helps students develop skills in identifying, cultivating, and processing medicinal plants, enhancing their knowledge of herbal remedies. "Biodynamic agriculture" provides students with skills in sustainable farming practices, organic cultivation, and holistic approaches to agriculture. The study of "Indian system of medicine" equips students with knowledge of traditional healing methods, Ayurvedic principles, and herbal formulations, enhancing their understanding of holistic healthcare practices.		Revi taliz e the glob al part ners hip for susta inabl e deve lop ment (Rol e of all Scho ols, KR MU) (SD G 17)	Prof essi onal Edu catio n (17. 1- 17.5 ) Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Technic al Skills that match Industr y Needs, Entrepr eneursh ip, Employ ability
Unit II	-	-	The study of nutraceuticals, herbs in food, and herbs-drugs can greatly benefit students globally by providing them with a comprehensive understanding of natural health and wellness. This knowledge equips students with insights into the potential therapeutic properties of certain foods and herbs, enabling them to make informed dietary choices and explore alternative approaches to healthcare. Such	Studying "Nutraceuticals" and "Herbs-Food & Herbs-Drugs" can help students in skill development by enhancing their understanding of natural remedies and their effects on health. It cultivates knowledge in the fields of nutrition, pharmacology, and herbal medicine, fostering critical thinking, research skills, and the				Global Educati on Knowle dge ,



		understanding can enhance personal well- being and support their future professional endeavors in fields related to nutrition and holistic medicine.	ability to assess the safety and efficacy of these products. This knowledge equips students with valuable expertise in the growing field of alternative medicine.	
Unit III	-	- The study of herbal cosmetics, herbal excipients, and herbal formulations can benefit students globally by providing them with a comprehensive understanding of natural ingredients and their applications in the beauty and pharmaceutical industries. This knowledge equips students with the skills to develop and manufacture effective, safe, and sustainable herbal products, meeting the growing demand for natural alternatives worldwide.	The study of herbal cosmetics, herbal excipients, and herbal formulation helps students develop skills in natural product development, formulation design, and understanding of herbal ingredients. It enhances their knowledge of plant-based remedies, extraction techniques, and quality control. These skills enable students to excel in the field of cosmetic science, pharmaceuticals, and herbal product development, contributing to the growing demand for natural and sustainable beauty and healthcare solutions.	1.a Ens ure signi fica nt mob iliza tion of reso urce s from a vari ety of sour ces
Unit IV	-	- The study of "Evaluation of Drug" helps students globally understand the process of testing and analysing the effectiveness and safety of drugs, ensuring their quality and efficacy. "Patenting and Regulatory requirements of natural products" educates students on legal aspects and protection of natural products. "Regulatory Issues" provides insight into	Studying the evaluation of drugs, patenting and regulatory requirements of natural products, and regulatory issues helps students develop essential skills in the pharmaceutical and biotechnology fields. These subjects provide knowledge about the process of evaluating drug efficacy and safety,Ensu re healt hy	Tec hnol ogy Use & Inte grati on (23.



Unit	the complex regulations governing pharmaceuticals, preparing students for careers in the global healthcare industry.         The study of "Schedule T - Good	protecting intellectual property         rights, and navigating regulatory         frameworks. Such skills are crucial         for careers in research,         development, and compliance         within the healthcare industry.	- 1- bein 23.1 g for 3) all at all at ages (SD G 3) Ensu re susta inabl e cons ump tion and prod uctio n patte rns (SD G 12) Ensu Tec	Corpor
v	An anufacturing Practice of Indian systems of medicine" can help students globally by providing them with insights into the manufacturing practices and quality standards followed in the Indian systems of medicine. This knowledge can be beneficial for students pursuing careers in pharmaceuticals, healthcare, or research, allowing them to understand and	Manufacturing Practice of Indian systems of medicine" helps students in skill development by providing them with a comprehensive understanding of the manufacturing practices and quality standards specific to Indian systems of medicine. This knowledge equips them with the necessary skills to	EnsuTecrehnolsustaogyinablUsee&consInteumpgratitiononand(23.prod1-	Corpor ate Allianc es to provide Big Sister/B ig Brother Connec



	incorporate best practices from Indian	ensure the safety, efficacy, and		uctio	23.1	tions
	medicine into their own work.	quality of herbal medicines and		n	3)	
		traditional remedies, thereby		patte		
		enhancing their competence in the		rns		
		field.		(SD		
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BP6 04T	Local	Regional	National	Global	<sup>∓</sup> Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability	Ency	Drof	Taskris
Unit I				Global Healthc are Needs. It will give the abosrpti on of all the oral dosage forms, in order to make the better formula tions product s.	It will brin g emp loya bilit y opp urtu nitie s in the CR Os	-	-	-	-	-	-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD G 3)	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs



Unit II	-	-	Global Healthc are Needs. It will give the distribu tion of all the oral dosage forms, in order to make the better	It will brin g emp loya bilit y opp urtu nitie s in the CR Os		-	-	-	_	-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs
Unit III	-	-	formula tions product s. Global Healthc are Needs. It will give the eliminat ion of all the oral dosage forms, in order to make the better	It will brin g emp loya bilit y opp urtu nitie s in the CR Os	-	-	-	-	-	-	G 3) Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs



			formula tions product s.								G 3)		
Unit IV	-	-	Global Healthc are Needs. It will give the pharma cokineti cs of all the oral dosage forms, in order to make the better formula tions product s.	It will brin g emp loya bilit y opp urtu nitie s in the CR Os	-	-	-	-	-	-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD G 3)	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs
Unit v			Global Healthc are Needs. It will give the non- linear pharma cokineti	It will brin g emp loya bilit y opp urtu	-	-	-	_	-	-	Ensu re healt hy lives and pro mote well -	Prof essi onal Edu catio n (17. 1- 17.5 )	Technic al Skills that match Industry Needs



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BP6 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	<b>Professional Ethics</b>	Gender	Ś	Environment & Sustainability		
Unit I				The relevance of immobilized enzymes and genetic engineering in pharmaceutical industries extends globally. Immobilized enzymes offer cost-effective and efficient solutions for pharmaceutical production, benefiting industries worldwide. Genetic engineering enables the development of advanced pharmaceutical products, personalized medicine, and innovative treatments, contributing to global healthcare advancements and addressing diverse patient needs on a global scale.			Develop a range of skills, including scientific and technical skills, critical thinking, laboratory techniques, and knowledge in areas such as immunology, biotechnology, and clinical practices.				"Ensur e health y lives and promo te well- being for all at all ages (SDG 3)"	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Technical Skills that match Industry Needs



Unit II	 	 Globally genetic engineering has revolutionized the understanding and treatment of diseases, paving the way for personalized medicine, targeted therapies, and advancements in healthcare outcomes.	 	Recombinant DNA technology, and applications in medicine can develop skills in molecular biology techniques, genetic engineering, experimental design, and data analysis, which are valuable in various research, medical, and biotechnology fields.	 	 	"Ensur e health y lives and promo te well- being for all at all ages (SDG 3)"	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Technical Skills that match Industry Needs
Unit III	 	 Have various applications in research, diagnosis, and therapeutic interventions. Appropriate use of vaccines, toxoids, anti-toxins, blood products and plasma substitutes are crucial in healthcare systems worldwide to support patient care and improve outcomes in critical situations.		Interdisciplinary thinking, analytical techniques, experimental design, problem-solving, and knowledge of molecular biology and industrial biotechnology. These skills are valuable in research, development, and production roles in the pharmaceutical and biotechnology industries.	 	 	"Ensur e health y lives and promo te well- being for all ages (SDG 3)"	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Technical Skills that match Industry Needs
Unit IV	 	 It provides insights into gene regulation, evolutionary processes, biotechnological applications, and the development of diagnostic tools, contributing to advancements in research and disease diagnosis.	 	Develop a range of skills, including laboratory techniques, molecular biology, problem-solving, research design, and biotechnological applications, which are	 	 	"Ensur e health y lives and promo te well-	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Technical Skills that match Industry Needs



				valuable in academic, research, and industry settings			being for all at all ages (SDG 3)"		
Unit v	 	 Efficient and safe production of pharmaceuticals, optimizing fermentation processes, understanding the production of specific compounds, and maintaining the quality and availability of	 	Technical proficiency, laboratory techniques, process optimization, quality assurance, problem-solving, attention to detail, research, and data	 	 	"Ensur e health y lives and promo te	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Technical Skills that match Industry Needs
		blood products for clinical use.		analysis, which are valuable in pharmaceutical and biotechnology industries, research institutions, and regulatory bodies			well- being for all at all ages (SDG 3)"		

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ance	opme	ance oyabi Devel Devel	ance ssion: er, staina			4 <sup>th</sup> IR
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BP606T														
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Quality assurance and quality management concepts, along with Total Quality Management (TQM) principles, contribute globally by ensuring the consistent production of high-quality pharmaceutical products, improving patient safety, and meeting regulatory requirements. Adherence to ICH guidelines harmonizes global standards, facilitating international collaboration and ensuring the safety, efficacy, and quality of pharmaceuticals worldwide.	Professionals with expertise in ensuring compliance, quality control, and continuous improvement of pharmaceutical processes are in high demand in the pharmaceutical industry, enhancing employability and contributing to the success of pharmaceutical companies and their products. These professionals should also be familiar with ICH guidelines and	-	-	Quality assurance and quality management concepts, Total Quality Management (TQM) principles, and adherence to ICH guidelines contribute to professional ethics by promoting a culture of transparency		-	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Technic al Skills that match Industry Needs



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					(TQM) princ	ciples.			grity in						
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									t in the						
								glot							
								heal	lthcare						
								syst	em.						
Unit II	-	-	-	Efficient organization and personnel	By foster	ing a	-		ective	-	-	-	Skill	Pro	Technic
				management contribute globally by	structured	and		orga	anization				s for	moti	al Skills
				fostering productivity, collaboration,	productive	work		and					Dec	ng	that
				and employee engagement across	environment				sonnel				ent	Hig	match
				international teams, leading to	encouraging			·	nagement				Wor	hj-	Industry
				streamlined operations, effective project	teamwork,	skill			tribute to				k	qual	Needs
									fessional				к (SD		Inceus
				execution, and a positive work culture,	developmen	i, allu		ethi					G	ity	
				ultimately driving global business	employee	cc .:			-					rese	
				success and economic growth.	happiness, o				blishing				4.4)	arch	
					organisation	and		clea						(18.	
					personnel				cies,					1-	
					managemen				moting					18.9	
					contribute	to		fair						)	
					employabilit	y and		trea	tment,						
					lead to in	nproved		and	fostering						



Unit III	-	Quality assurance and adherence to Good Laboratory Practices (GLP) contribute globally by ensuring reliable and accurate scientific data, promoting reproducibility and credibility in research, development, and regulatory assessments. This supports global harmonization, facilitates knowledge exchange, and enhances public trust in accuration facilitates and driving	productivity, professional progress, and job retention rates. By giving professionals practical experience with analytical methods, data interpretation, and quality assurance principles, quality control and	-	-	a culture of integrity, thereby ensuring ethical conduct, respect for diversity, and accountabilit y in the workplace, enhancing trust and upholding ethical standards globally. Quality control and adherence to Good Laboratory Practices (GLP) contribute to professional athioa	-	-	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18	Technic al Skills that match Industry Needs
		harmonization, facilitates knowledge	principles, quality			contribute to				G	rese	



					disciplines of laboratory science and quality management and are crucial for accurate testing, regulatory compliance, and maintaining product safety.		They ensure compliance with ethical standards, prevent fraud and misconduct, and uphold the credibility and trustworthin ess of research and laboratory practices globally.					
Unit IV	-	-	-	Effective management of complaints and proper document maintenance in the pharmaceutical industry contributes globally by ensuring transparency, accountability, and continuous improvement in product quality, safety, and regulatory compliance. It fosters customer satisfaction, regulatory compliance, and knowledge sharing, thereby enhancing global public health and trust in pharmaceutical products.	Professionals skilled in managing complaints and document and maintenance in the pharmaceutical industry are sought after as they contribute to effective customer relationship management, regulatory compliance, and process improvement, enhancing employability and career opportunities	-	- Proper management of complaints and thorough document maintenance in the pharmaceuti cal industry contribute to professional ethics by ensuring transparency , accountabilit y, and adherence to	-	-	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Technic al Skills that match Industry Needs



Unit v		-	Calibration and validation processes contribute globally by ensuring accurate and reliable measurement and testing results, which are crucial for maintaining quality standards, regulatory compliance, and global harmonization in various industries, including pharmaceuticals, manufacturing, and scientific research.	in quality assurance, regulatory affairs, and customer service roles. Professionals skilled in calibration and validation techniques are highly sought after in industries that require accurate measurements and reliable data, enhancing their	 regulatory standards, promoting integrity, and trust in dealing with customer concerns and maintaining accurate records of product information and processes Calibration and validation contribute to professional ethics by ensuring the integrity and accuracy of measurement	 -	Skill s for Dec ent Wor k (SD G 4.4)	Pro moti ng Hig hj- qual ity rese arch (18.	Technic al Skills that match Industry Needs
			harmonization in various industries, including pharmaceuticals,	require accurate measurements and reliable data,	ensuring the integrity and accuracy of		(SD G	ity rese arch	Needs
					adherence to regulatory standards, thereby				



			upholding ethical		
			standards		
			and		
			maintaining		
			trust in		
			scientific		
			research and		
			data		
			analysis.		

to the national, nd global ital needs	To the ity/ urship/ pment	to the I Ethics, Human <i>i</i> ronment oility		
Relevance local, regional ar developmen	Relevance Employabil Entreprenei Skill Develo	Relevance Professiona Gender, Values, Env & Sustainal	SDG	POE/4 <sup>th</sup> IR



BP6 07P											&			
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment Sustainability			
Unit I	, ,			Qualitative analysis of			Knowledge of	-	-	-	-	Sustai nable	Quality Universities	Global Educati
1				carbohydrates, sugars, and proteins is a common practice in			qualitative					Devel	and	on
				biochemistry laboratories			tests can					opmen	Colleges: A	Knowle
				worldwide. These identification			provide					t and	New and	dge
				tests help researchers and scientists			confirmatio					Global	Forward-	Practica
				determine the presence or absence			n of the					Citize	looking	1
				of specific biomolecules in a given			presence of					nship	Vision for	Courses
				sample.			certain					(SDG	India's	from
							moieties					4.7)	Higher	Industry
												Schola	Education	/Alumni
												rships	System (9.1- 9.3)	Technic al Skills
												for Higher	9.3) Professional	that
												Educat	Education	match
												ion	(17.1-17.5)	Industry
												(SDG	Promoting	Needs
												(52 C 4.b)	Highj-	Focus
												Revita	quality	on
												lize	research	Employ
												the	(18.1-18.9)	ability
												global	Technology	Skills
												partner	Use &	(Local/
												ship	Integration	Regiona
								1				for	(23.1-	1 and



		able       Interview         develo       ip         pment       Pro         (SDG       s         17)       Cor         ng       Pro         Ent       Interview         Interview       Interview         Interview	stem
Unit II	Qualitative analysis of the presence of abnormal constituents in blood and urine sample is a common practice in biochemistry laboratories worldwide.	of qualitative tests can provide confirmatio n of the presence of certain moietiesnable Devel and opmen Global Global Colleges: A Knot 	owle enctica urses m lustry lumni chnic Skills t tch lustry eds cus



								global partner ship for sustain able develo pment (SDG 17)	Technology Use & Integration (23.1- 23.13)	Skills (Local/ Regiona 1 and Global) Internsh ip Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit III	Preparation of buffer solutions and measurement of pH are globally important topics in various scientific disciplines, including chemistry, biology, biochemistry, and environmental science.		By using the Henderson- Hasselbalc h equation, you can design buffers for various application s, such as biological assays, enzymatic reactions, or laboratory	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships for Higher Educat ion (SDG	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3) Professional Education (17.1-17.5) Promoting	Global Educati on Knowle dge Practica 1



				experiment s, where maintaining a specific pH is crucial.					4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	Highj- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	Focus on Employ ability Skills (Local/ Regiona 1 and Global) Internsh ip Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System
Unit IV		Biochemistry experiment related to enzymes (kinetics, temperature, pH etc) conducted worldwide		A skilled person in biochemistr y experiment work in a pathology laboratory typically performs various tasks related to	-	-	-	-	Sustai nable Devel opmen t and Global Citize nship (SDG 4.7) Schola rships for	Quality Universities and Colleges: A New and Forward- looking Vision for India's Higher Education System (9.1- 9.3)	Global Educati on Knowle dge Practica l Courses from Industry /Alumni Technic al Skills



	the analysis of biological samples and the interpretati on of results.	Higher Educat ion (SDG 4.b) Revita lize the global	Professional Education (17.1-17.5) Promoting Highj- quality research (18.1-18.9) Technology	that match Industry Needs Focus on Employ ability Skills
	on of	lize the	research (18.1-18.9)	Employ ability Skills
		pment (SDG 17)		Program s Consulti ng Field Projects Entrepre neurship Program through Innovati on System



Unit	Relevance to the local, national, regional and global developmental needs					Entrepreneursm <i>p</i> / Skill Development		Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability		SDG	NEP	POE/4 <sup>th</sup> IR		
BP6 08P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	In gaining basic knowledge related to dose calculation, antiallergic activity by mast cell stabilization assay and anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model which enhances basic mechanism of drugs	-	-	Understanding basics of dose calculation, antiallergic activity, anti-ulcer activity of a drug and NSAIDS	-	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge



Unit II	-	-	-	To understand the effect of drugs on gastrointestinal motility, agonist and antagonists on guinea pig ileum and estimation of serum biochemical parameters by using semi- autoanalyser which helps in basic understanding of experimental pharmacology	-	-	The basic knowledge related to drugs on gastrointestinal motility, agonist and antagonist as well as biochemical parameters	-	_	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit III		-	-	Emphasize on studies related to saline purgative on frog intestine, Insulin hypoglycemic effect in rabbit as well as test for pyrogens which enhances basic pharmacological knowledge			Gaining basics of purgative on frog intestine, insulin hypoglycemic effect and pyrogens	-	_	-	_	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit IV	-	-	-	To focus on studies related to determination of acute oral toxicity (LD50) of a drug and acute skin irritation / corrosion and acute eye irritation / corrosion of a test substance which help in understanding toxicity studies			Understanding basics of toxicity studies related to acute oral toxicity acute skin irritation and acute eye irritation	-	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5 )	Global educatio n knowled ge
Unit v	-	-	-	To elaborate the calculation of pharmacokinetic parameters from a given data and biostatistics methods in experimental pharmacology which helps in understanding basis calculation			The basic knowledge related pharmacokinetics	-	-	-	-	Skills for Decent Work SDG 4.4	Prof essi onal educ atio n(17 .1- 17.5	Global educatio n knowled ge



							)	

Unit	Relevance to the local, national, regional and global developmental needs					Employability/ Entrepreneurship/ criit Davoloumout		Relevance to the Professional Ethics, Gender, Human Values. Environment	& Sustainability			SDG	NEP	POE/4 <sup>th</sup> IR
BP6 09P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				The study of preliminary phytochemical screening of crude drugs helps students globally by providing a foundation for understanding the chemical composition of			The study of preliminary phytochemical screening of crude drugs helps students in skill development by enhancing their knowledge and understanding of plant-based compounds. It enables					Revi taliz e the glob al part	Prof essi onal Edu catio n	Technic al Skills that match Industry Needs,



			medicinal plants. This knowledge enables students to identify and isolate bioactive compounds, leading to the development of new drugs and treatments. It contributes to the field of natural medicine, supporting global efforts to discover novel therapeutic options and promote sustainable healthcare practices.	them to learn techniques for identifying and analyzing chemical constituents, fostering critical thinking, and developing laboratory skills necessary for pharmaceutical research and drug discovery.		ners hip for susta inabl e deve lop ment (Rol e of all Scho ols, KR MU) (SD G 17)	(17. 1- 17.5 ) Pro moti ng Hig hj- qual ity rese arch (18. 1- 18.9 )	Entrepre neurship , Employ ability
Unit II	-	-	The study of "Evaluation of excipients of natural origin" benefits students globally by providing them with knowledge and understanding of natural excipients, which are substances used in pharmaceutical formulations. This knowledge allows students to develop safer and more effective drug formulations, promoting sustainable and eco-friendly practices in the pharmaceutical industry. Understanding natural excipients also enables students to explore new possibilities for	The study of "Evaluation of excipients of natural origin" helps students in skill development by enhancing their understanding of natural excipients used in pharmaceutical formulations. It allows students to develop critical thinking, analytical skills, and knowledge of quality assessment methods. This knowledge equips them to evaluate, select, and formulate safer and more effective pharmaceutical products, contributing to their overall skill development in the field.				Global Educati on Knowle dge ,



Unit III	-	-	drug delivery and develop innovative pharmaceutical products. The study of "Monograph analysis of herbal drugs" helps students globally by providing a comprehensive understanding of the medicinal properties, chemical composition, quality control, and therapeutic applications of herbal medicines. This knowledge equips students with the necessary skills to evaluate, formulate, and recommend herbal remedies, contributing to the advancement of traditional medicine and expanding healthcare options for diverse populations worldwide.	The study of "Monograph analysis of herbal drugs" helps students in skill development by enhancing their knowledge of medicinal plants, their properties, and potential uses. It fosters skills in research, critical thinking, and data analysis, while also promoting an understanding of drug formulation and quality control. This knowledge equips students with valuable expertise in the field of herbal medicine and supports their professional growth.			1.a Ens ure signi fica nt mob iliza tion of reso urce s from a vari ety of sour	
Unit IV	-	-	The study of prepared and standardized extracts helps students globally by providing a consistent and reliable basis for learning. These extracts ensure that students have access to accurate and uniform information, facilitating easier comprehension and	The study of prepared and standardized extracts helps students in skill development by providing them with consistent and reliable samples for analysis and experimentation. This enables them to understand the principles and techniques involved in extracting and standardizing substances,		Ensu re healt hy lives and pro mote well	sour ces Tec hnol ogy Use & Inte grati on (23.	



	comparability of results across         different       educational         institutions.       Additionally,         standardized extracts promote         transparency       and         reproducibility,       fostering         shared       understanding         enhancing collaboration among         students worldwide.	enhancing their scientific knowledge and laboratory skills in a controlled and reproducible manner.	- bein g for all at all ages (SD G 3) Ensu re susta inabl e cons ump tion and prod uctio n patte rns (SD G 12)	1- 23.1 3)	Cormore
Unit v	The study of prepared and standardized extract in cosmetic formulations helps students globally by providing them with a comprehensive understanding of the principles and techniques involved in formulating cosmetics. It equips them with knowledge of selecting and preparing standardized extracts	Studying prepared and standardized extracts in cosmetic formulations helps in skill development by enhancing knowledge of ingredient selection, formulation techniques, and quality control processes. It cultivates expertise in developing effective and safe cosmetic products, optimizing product stability and efficacy, and meeting	Ensu re susta inabl e cons ump tion and prod	Tec hnol ogy Use & Inte grati on (23. 1-	Corpora te Alliance s to provide Big Sister/B ig Brother Connect



for cosmetic products, ensuring	5	regulatory requirements. This	1	uctio	23.1	ions
quality, safety, and efficacy	.	knowledge contributes to the	1	n	3)	
This knowledge enables student	5	development of advanced		patte		
to develop innovative and	1	formulation skills, ensuring high-	1	rns		
effective cosmetic formulations	,	quality and standardized cosmetic		(SD		
contributing to the advancemen	t	preparations.		G		
of the global cosmetics industry				12)		

## Semester-VII

Unit	evance to the al, national, ional and global elopmental needs	evance To the ployability/ trepreneurship/ Il Development	evance to the ofessional Ethics, nder, Human ues, Environment oustainability	J	2	E/4 <sup>th</sup> IR
	Rele local deve	Rele Emt Skill	Rele Prof Gen & Si & Si	SDG	NEP	POF



BP 701 T														
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	Charact erization of Drugs help in drug discover y	-	-	-	With the aid of the UV- visible spectrosc opy technique, scientists may easily ascertain the substance concentrat ions, examine reaction rates, and derive rate equations	-	-	-	-	Skills for Decent Work; Research- related skills (case study, seminars and hands on training) (SDG 4.4)	Professi onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	Technic al Skills that match Industry Needs/ Hands- on Experie nce



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			for .							
			reactions,							
			which can							
			then be							
			used to							
			suggest a							
			mechanis							
			m.							
Unit II -	 Learnin -	-	То	-	-	-	-	Skills for	Professi	Technic
	g of		understan					Decent	onal	al Skills
	Techniq		d the					Work;	Educati	that
	ues help		crucial					Research-	on	match
	to		function					related skills	(17.1-	Industry
	discover		that					(case study,	17.5);	Needs/
	drugs		infrared					seminars and	Promoti	Hands-
			spectrosc					hands on	ng	on
			opy plays					training)	Highj-	Experie
			in the					(SDG 4.4)	quality	nce
			investigati						researc	nee
			on of the						h (18.1-	
			structure						18.9)	
			of organic						10.7)	
			molecules							
			To							
			improve one's							
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			identify							
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			substance'							
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Unit III	-	-	Boost	-	-	-	compositi on by analysing its infrared spectrum Chromato	_	-	-	-	Skills for	Professi	Technic
			the diagnosi s, prognosi s and treatmen t of medical conditio n				graphy allows for the purificatio n, separation , and identificat ion of a mixture's constituen t parts for qualitativ e and quantitati ve examinati on.					Decent Work; Research- related skills (case study, seminars and hands on training) (SDG 4.4)	onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	al Skills that match Industry Needs/ Hands- on Experie nce
Unit IV	-	-	-	Help in drug designin g	-	-	HPLC and GLC allows the componen ts of a mixture to be separated, identified, and purified	-	-	-	-	Skills for Decent Work; Research- related skills (case study, seminars and hands on training) (SDG 4.4)	Professi onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc	Technic al Skills that match Industry Needs; Skill Develop ment



						for qualitativ e and quantitati ve examinati on.					h (18.1- 18.9)	
Unit v	-	-	Ionizabl e compou nds are separate d using ion exchang e chromat ography accordin g to their overall charge.	-	-	Learning of analytical technique make the learner industry ready	-	-	-	Skills for Decent Work; Research- related skills (case study, seminars and hands on training) (SDG 4.4)	Professi onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	Technic al Skills that match Industry Needs/ Hands- on Experie nce



Unit BP702T	Relevance to the local, national,	regional and global developmental needs			Relevance To the Employability/ Entrepreneurship/ Skill Development			Relevance to the Professional Ethics	Gender, Human	values, Environment & Sustainability		SDG	NEP	POE/4 <sup>th</sup> IR
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Aiming to understand the process of pilot plant and scale up of pharmaceutical dosage for By providing valuable data studies contribute globally to the development of safe and effective pharmaceutical products. Understand	Enhancing knowledge and expertise in the characterization and analysis of drug substances, formulation development, and optimization techniques.			-	-	-	-	(SD G 3)	(18. 1- 18.9 )	Global Educati on Knowle dge



				the process of technology transfer from lab scale to commercial batch.								
Unit II		-	-	Technology transfer (TT) process of conveying results stemming from scientific and technological research to the market place and to wider society, along with associated skills and procedures, and is as such an intrinsic part of the technological innovation process.	Technology transfer is important to ensure that the company's innovation becomes commercialized. This helps early- stage intellectual property to become tools for research. It can also be used as a base for new products and services for public use.	-	-	N O		(SD G 17)	(18. 1- 18.9 )	Dedicat ed Career Manage ment Centres
Unit III	-	-	-	Globally Understand the approval process and regulatory requirements for drug The competent authority review the application and approve the drug for marketing only if the drug is found to be safe and effective in human being or the drug have more desirable effect as	Drug companies seeking to sell a drug in the United States must first test it. The company then sends CDER the evidence from these tests to prove the drug is safe and effective for its intended use. A team of	-	-	No	-	(SD G 17)	(18. 1- 18.9 )	Dedicat ed Career Manage ment Centres



Unit IV				compare to the adverse effect.	CDER physicians, statisticians, chemists, pharmacologists, and other scientists reviews the company's data and proposed labeling. If this independent and unbiased review establishes that a drug's health benefits outweigh its known risks, the drug is approved for sale. A QMS supports business leadership, promotes customer focus, improves company culture and the bottom line, manages new innovations, and	-	-	-	-	N o	-	(SD G 17)	(18. 1- 18.9 )	Dedicat ed Career Manage ment Centres
				quality in the production of pharmaceutical products.	innovations, and helps you understand any issues.									
Unit v	-	-	-	Pharmaceutical regulations, or medicines regulations, have been defined as the combination of legal, administrative,	Regulatory affairs is a profession within regulated industries such as pharmaceuticals, biopharmaceutical	-	-	-	-	N o	-	(SD G 17)	(18. 1- 18.9 )	Dedicat ed Career Manage ment Centres



		and technical measures	s, medical devices,					
		that governments take	cosmetics and					
		to ensure the safety,	consumer health,					
		efficacy, and quality of	natural health, and					
	1	medicines, as well as	veterinary					
		the relevance and	products.					
		accuracy of product						
	i	information						

Image: Complexity of the second sec	the the	the hics, man ment	
to natio na gl	To ity/ urshij	to Hu Ality Dility	
nnce al ai pmer	ince yabil orene evelo	nce siona r, Env ainal	a II
Releva ocal, egion levelo	Rele va Emplo Skill D	celeva rofes fende alues z Sust	SDG NEP POE/4



BP 703T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Trained the students for differen t functio n of hospital s and staffs			In this Unit , Classificati on of hospital- Primary, Secondary and Tertiary hospitals, Classificati on based on clinical and non- clinical basis using ppt and assignment					Skill s for Dec ent Wor k (SD G 4.4) Skill s for Dec ent Wor k (SD G 4.4)	Prof essi onal Edu catio n (17. 1- 17.5 )	Skill Develop ment



Unit	-	-	In this,	This unit	Skill	Prof	Employ
Π			Student	based	develop	essi	ability
			s will	Dispensing	ment	onal	
			learn	of drugs to		Edu	
			about	inpatients,		catio	
			the	types of		n	
			dispensi	drug		(17.	
			ng of	distribution		1-	
			drugs as	systems,		17.5	
			per the	charging		)	
			standar	policy and		ĺ.	
			ds	labelling,			
			harmon	Dispensing			
			ized	of drugs to			
			globally	ambulatory			
				patients,			
				and			
				Dispensing			
				of			
				controlled			
				drugs			
Unit	-	-	Globall	In this,			Skill
III			у,	students			Develop
			Poisoni	learned and			ment
			ng and	trained to			
			suicides	Drug and			
			are	Poison			
			challen	information			
			ges, students	centre,			
				Sources of			
			are trained	drug information			
			to work	mormation			
			under	, Computeris			
			the	ed services,			
			drug,	and storage			
		I	urug,	and storage			



		poison and their storage, docume ntation	and retrieval of information		
Unit IV		Globall y , Glauco ma, cataract and other eye disorder s are increasi ng to many folds, thus trained the students and make them availabl e as skilled researc hers	In this, students will learn about the Concept of clinical pharmacy, functions and responsibili ties of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, clinical review, pharmacist interventio n, Ward round participatio n, Medication history and		Skill Develop ment



				Pharmaceut				
				ical care.				
Unit				In this unit		Skill	Prof	Employ
v				, students		s for		ability
				will learn		Dec	onal	
				Organisatio		ent	Edu	
				n of drug		Wor	catio	
				store, types		k	n	
				of materials		(SD	(17.	
				stocked and		G	1-	
				storage		4.4)	17.5	
				conditions,			)	
				Purchase				
				and				
				inventory				
				control:				
				principles,				
				purchase				
				procedure,				
				purchase				
				order,				
				procuremen				
				t and				
				stocking,				
				Economic				
				order				
				quantity,				
				Reorder				
				quantity				
				level, and				
				Methods				
				used for the				
				analysis of				
				the drug				
				expenditure				



Unit the construction the construction of the	, the uip/ ent	the 2thics, 1uman 1ument	
ental and set	e To bility/ neursh elopmo	e to HI E hrviron nability	~
evance J, elopm	evance ployat I Deve	vanc fessio der, ues, E ustair	/4th I
Relc devic	E B B B B B B B B B B B B B B B B B B B	Rele Gen & Sulv	POF NEP



BP704 T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability	Ency	Insti	Corpora
Unit I	This course is intended to provide fundamental information on different conventional drug delivery systems/contro lled drug delivery systems with local relevance and developmental requirements. They can create novel dosage forms.	This course is intended to provide fundamental information on different conventional drug delivery systems/controlled drug delivery systems with regional relevance and developmental requirements. They can create novel dosage forms.	This course is intended to provide fundamental information on different conventional drug delivery systems/control led drug delivery systems with national relevance and developmental requirements. They can create novel dosage forms.	This course is intended to provide fundamen tal informati on on different conventio nal drug delivery systems/c ontrolled drug delivery systems with global relevance and	Their pharm aceutic al industr y/resea rch depart ment (nation al/inter nation al) has a wide choice of career opport unities	This course knowl edge gives you the ability to build a pharm aceutic al medic ation develo ping firm on a nation al and	This course is design ed to teach basic inform ation on various conven tional drug deliver y system s/contr olled drug deliver	This course is designed to teach on various conventi onal drug delivery systems/c ontrolled drug delivery systems with local relevance and develop ment needs.			-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD G 3)	Insti tutio nal Rest ruct urin g and Con solid atio n (10. 1- 10.1 4)	Corpora te/Comp any Trips/Pr ojects



				developm ental requireme nts. They can create novel dosage forms.		world wide scale.	y system s with local relevan ce and develo pment needs. They have the ability to develo p unique dosage formul ations.	They have the ability to develop unique dosage formulati ons.					
Unit II	This course is intended to provide fundamental information on different Mucosal Drug Delivery system /Microcapsulat ion/implantabl e drug delivery system with local relevance and developmental	This course is intended to provide fundamental information on different Mucosal Drug Delivery system /Microcapsulation/ implantable drug delivery system with regional relevance and developmental requirements. They can create novel dosage forms.	This course is intended to provide fundamental information on different Mucosal Drug Delivery system /Microcapsulati on/implantable drug delivery system with national relevance and developmental	This course is intended to provide fundamen tal informati on on different Mucosal Drug Delivery system /Microcap sulation/i mplantabl	Their pharm aceutic al industr y/resea rch depart ment (nation al/inter nation al) has a wide choice of	This course knowl edge gives you the ability to build a pharm aceutic al medic ation develo	This course is design ed to teach basic inform ation on various conven tional drug deliver y	This course is designed to teach on various conventi onal drug delivery systems/c ontrolled drug delivery systems with local		-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD	Insti tutio nal Rest ruct urin g and Con solid atio n (10. 1- 10.1 4)	Corpora te/Comp any Trips/Pr ojects



	requirements.		requirements.	e drug	career	ping	system	relevance				G 3)		
	They can		They can create	delivery	opport	firm	s/contr	and				0.5)		
	create novel		novel dosage	system	unities	on a	olled	develop						
	dosage forms.		forms.	with	unities	nation	drug	ment						
	dosuge forms.		Torms.	global	•	al and	deliver	needs.						
				relevance		world	y	They						
				and		wide	system	have the						
				developm		scale.	s with	ability to						
				ental		seale.	local	develop						
				requireme			relevan	unique						
				nts. They			ce and	dosage						
				can create			develo	formulati						
				novel			pment	ons.						
				dosage			needs.	0115.						
				forms.			They							
				101113.			have							
							the							
							ability							
							to							
							develo							
							p							
							unique							
							dosage							
							formul							
							ations.							
Unit III	This course is	This course is	This course is	This	Their	This	This	This	-	-	-	Ensu	Insti	Corpora
	intended to	intended to provide	intended to	course is	pharm	course	course	course is				re	tutio	te/Comp
	provide	fundamental	provide	intended	aceutic	knowl	is	designed				healt	nal	any
	fundamental	information on	fundamental	to provide	al	edge	design	to				hy	Rest	Trips/Pr
	information on	different	information on	fundamen	industr	gives	ed to	teach on				lives	ruct	ojects
	different	Transdermal Drug	different	tal	y/resea	you	teach	various				and	urin	5
	Transdermal	Delivery Systems /	Transdermal	informati	rch	the	basic	conventi				pro	g	
	Drug Delivery	Gastroretentive	Drug Delivery	on on	depart	ability	inform	onal drug				mote	and	
	Systems /	drug delivery	Systems /	different	ment	to	ation	delivery				well	Con	
	Gastroretentiv	systems/	Gastroretentive	Transder	(nation	build a	on	systems/c				-	solid	
	e drug delivery	Nasopulmonary	drug delivery	mal Drug	al/inter	pharm	various	ontrolled				bein	atio	



	systems/ Nasopulmonar y drug delivery system with local relevance and developmental requirements. They can create novel dosage forms.	drug delivery system with regional relevance and developmental requirements. They can create novel dosage forms.	systems/ Nasopulmonar y drug delivery system with national relevance and developmental requirements. They can create novel dosage forms.	Delivery Systems / Gastrorete ntive drug delivery systems/ Nasopulm onary drug delivery system with global relevance and developm ental requireme nts. They can create novel dosage forms.	nation al) has a wide choice of career opport unities	aceutic al medic ation develo ping firm on a nation al and world wide scale.	conven tional drug deliver y system s/contr olled drug deliver y system s with local relevan ce and develo pment needs. They have the ability to develo p unique dosage formul	drug delivery systems with local relevance and develop ment needs. They have the ability to develop unique dosage formulati ons.				g for all at all ages (SD G 3)	n (10. 1- 10.1 4)	
			This second is			TTL : .	formul ations.					<b>T</b>	Inst	Company
Unit IV	This course is intended to provide fundamental information on different	This course is intended to provide fundamental information on different Targeted drug Delivery with	This course is intended to provide fundamental information on different	This course is intended to provide fundamen tal	Their pharm aceutic al industr y/resea	This course knowl edge gives you	This course is design ed to teach	This course is designed to teach on various	-	-	-	Ensu re healt hy lives and	Insti tutio nal Rest ruct urin	Corpora te/Comp any Trips/Pr ojects



Targeted drug	regional relevance	Targeted drug	informati	rch	the	basic	conventi		pro	g	
Delivery with		Delivery with	on on	depart	ability	inform	onal drug		mote	and	
local relevance	<b>▲</b>	national	different	ment	to	ation	delivery		well	Con	
and	can create novel	relevance and	Targeted	(nation	build a	on	systems/c		-	solid	
developmental	dosage forms.	developmental	drug	al/inter	pharm	various	ontrolled		bein	atio	
requirements.	0	requirements.	Delivery	nation	aceutic	conven	drug		g for		
They can		They can create	with	al) has	al	tional	delivery		all at	(10.	
create novel		novel dosage	global	a wide	medic	drug	systems		all	Ì-	
dosage forms.		forms.	relevance	choice	ation	deliver	with		ages	10.1	
			and	of	develo	у	local		(ŠD	4)	
			developm	career	ping	system	relevance		G 3)	ŕ	
			ental	opport	firm	s/contr	and				
			requireme	unities	on a	olled	develop				
			nts. They		nation	drug	ment				
			can create		al and	deliver	needs.				
			novel		world	у	They				
			dosage		wide	system	have the				
			forms.		scale.	s with	ability to				
						local	develop				
						relevan	unique				
						ce and	dosage				
						develo	formulati				
						pment	ons.				
						needs.					
						They					
						have					
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						ability					
						to					
						develo					
						p .					
						unique					
						dosage					
						formul					
						ations.					



Unit v	This course is	This course is	This course is	This	Their	This	This	This	-	-	-	Ensu	Insti	Corpora
e int v	intended to	intended to provide	intended to	course is	pharm	course	course	course is				re	tutio	te/Comp
	provide	fundamental	provide	intended	aceutic	knowl	is	designed				healt	nal	any
	fundamental	information on	fundamental	to provide	al	edge	design	to				hy	Rest	Trips/Pr
	information on	different Ocular	information on	fundamen	industr	gives	ed to	teach on				lives	ruct	ojects
	different	Drug Delivery	different	tal	y/resea	you	teach	various				and	urin	Ū.
	Ocular Drug	Systems with	Ocular Drug	informati	rch	the	basic	conventi				pro	g	
	Delivery	regional relevance	Delivery	on on	depart	ability	inform	onal drug				mote	and	
	Systems with	and developmental	Systems with	different	ment	to	ation	delivery				well	Con	
	local relevance	requirements. They	national	Ocular	(nation	build a	on	systems/c				-	solid	
	and	can create novel	relevance and	Drug	al/inter	pharm	various	ontrolled				bein	atio	
	developmental	dosage forms.	developmental	Delivery	nation	aceutic	conven	drug				g for	n	
	requirements.		requirements.	Systems	al) has	al	tional	delivery				all at	(10.	
	They can		They can create	with	a wide	medic	drug	systems				all	1-	
	create novel		novel dosage	global	choice	ation	deliver	with				ages	10.1	
	dosage forms.		forms.	relevance	of	develo	У	local				(SD	4)	
				and	career	ping	system	relevance				G 3)		
				developm	opport	firm	s/contr	and						
				ental	unities	on a	olled	develop						
				requireme	•	nation	drug	ment						
				nts. They		al and	deliver	needs.						
				can create		world	У	They						
				novel		wide	system	have the						
				dosage		scale.	s with local	ability to						
				forms.			relevan	develop unique						
							ce and	dosage						
							develo	formulati						
							pment	ons.						
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				formul				
				ations.				

	Unit BP 7
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employability/
Entrepreneurship	Skill Development
Skill Development	
Professional Ethics	inal
Gender	–Gender, Human Values, Environment & Sustainability
Human Values	1
Environment & Sustainability	1
	SDG
	NEP
	POE/4 <sup>th</sup> IR



Unit I		-	Charact erization of Drugs help in drug discover y	-	Knowl edge of UV spectr oscopy increas e the emplo yabilit y of the learner in analyti cal sector like QA depart ment of Pharm aceutic al compa nies	-	-	-	-	-		Skills for Decent Work; Research- related skills (SDG 4.4)	Professi onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	Technic al Skills that match Industry Needs/ Hands- on Experie nce
Unit II	-			Learnin g of Techniq ues help to discover drugs	Knowl edge of Infra red and colori metry spectr	-	-	-	-	-	-	Skills for Decent Work; Research- related skills	Professi onal Educati on (17.1- 17.5); Promoti ng Highj-	Technic al Skills that match Industry Needs/ Hands- on Experie



					oscopy increas e the emplo yabilit y of the learner in analyti cal sector like QA depart ment of Pharm aceutic al compa nies								quality researc h (18.1- 18.9)	nce
Unit III	-	-	Boost the diagnosi s, prognosi s and treatmen t of medical conditio n	-	Knowl edge of HPLC and GLC increas e the emplo yabilit y of the learner	-	-	-	-	-	-	Skills for Decent Work; Research- related skills (SDG 4.4)	Professi onal Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	Technic al Skills that match Industry Needs/ Hands- on Experie nce



Unit IV	-	-	Help in drug	in analyti cal sector like QA depart ment in metho d develo pment and validat ion Knowl edge	-	-	_	-	-	Skills for Decent	Professi onal	Technic al Skills
			estmatio n	of HPLC increas e the emplo yabilit y of the learner in analyti cal sector like QA depart ment						Work; Research- related skills (SDG 4.4)	Educati on (17.1- 17.5); Promoti ng Highj- quality researc h (18.1- 18.9)	that match Industry Needs; Skill Develop ment



		in metho d develo pment and validat ion			
Unit v -	Help in - drug discover y & develop ment by inhibitin g enzymes	Knowl edge ofGLC increas eincreas eethe emplo yabilit yyof the learner in analyti cal sector like QA depart ment in metho d develo pment and validat ion		Skills for Decent Work; Research- related skills (SDG 4.4)	ProfessiTechniconalal SkillsEducatithatonmatch(17.1-Industry17.5);Needs/PromotiHands-ngonHighj-Experiequalitynceresearchh(18.1-18.9)Image: Second Seco



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## Semester-VIII

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L 1 0 8 d 8 Local Regional National	<u> </u>	Employability Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values Environment & Sustainability		
U n i t I	By understanding these statistical concepts and their application in addressing global needs, policymakers, researchers, and organizations can make evidence-based decisions, develop targeted interventions, and monitor progress towards achieving global goals such as poverty reduction, improved healthcare, and sustainable development. Additionally, these concepts can contribute to improving data literacy and fostering critical thinking skills, enabling individuals to better understand and interpret information in an increasingly data-driven		Overall, Unit I in skill development provides a solid foundation in statistical concepts, techniques, and their applications. These skills are transferable and can benefit individuals in various professional domains, enabling them to analyze data effectively, make informed decisions, and contribute to evidence- based practices.	-	_		SDG 9: Industry, Innovation, and Infrastructure: The use of statistical techniques and concepts in pharmaceutical research and development supports innovation in the industry. Understanding measures of central tendency, dispersion, and correlation helps identify patterns, trends, and relationships in	Promoting High-quality research (18.1-18.9) By incorporating Unit 1 into the NEP, educational institutions can promote high-quality research by equipping students with robust research methodologies, advanced data analysis techniques, and interdisciplinary problem-solving skills. This, in turn, fosters a research culture, promotes collaboration between academia and industry, and contributes to the achievement of SDG 18 by driving research excellence and innovation.



	world.				pharmaceutical data, leading to improved drug development processes, quality control, and innovation in healthcare.		
U n i t I I	 By applying these concepts in research, decision- making, and policy formulation, Unit II contributes to addressing global needs by enabling accurate predictions, quantifying uncertainty, making valid inferences, and facilitating effective comparisons. These statistical tools are essential in fields such as public health, medicine, social sciences, and environmental studies, helping tackle complex global challenges and improving the well-being of populations worldwide.	 Overall, Unit II in skill development enhances individuals' statistical literacy, data analysis skills, and critical thinking abilities. These skills are transferable and valuable in a wide range of professional domains, including research, healthcare, finance, marketing, and policy analysis. Mastery of these concepts enables individuals to make evidence-based decisions, conduct rigorous analyses, and contribute to informed decision-making processes.	-		SDG 3: Good Health and Well- being: Biostatistics plays a crucial role in studying health- related outcomes, evaluating interventions, and monitoring public health indicators. Research methodology helps in designing studies to assess health interventions, understand disease patterns, and improve healthcare delivery.	Promoting High-quality research (18.1-18.9) By incorporating Unit II into the NEP, educational institutions can promote high-quality research by equipping students with robust research methodologies, advanced data analysis techniques, and interdisciplinary problem-solving skills. This, in turn, fosters a research culture, promotes collaboration between academia and industry, and contributes to the achievement of SDG 18 by driving research excellence and innovation.	Sk ill E m be dd ed Co ur se s De ve lo p m en t
U n i	 By studying and applying the concepts covered in Unit III, individuals can	 Unit III in skill development enhances individuals' research skills,	Maintaining the uniqueness	 	-	PromotingHigh-qualityresearch(18.1-18.9)By incorporating Unit III	Sk ill E



	contribute to addressing global needs through rigorous research, valid data analysis, effective data presentation, and the development of ethical and well-designed clinical trials. These skills are essential in fields such as healthcare, public health, social sciences, and environmental studies, helping tackle global challenges and improve the well-being of individuals and communities worldwide.	data analysis and visualization abilities, critical thinking, and understanding of methodological considerations. These skills are transferable and valuable in various professional domains, including research, healthcare, academia, and policy analysis. Mastery of these concepts equips individuals to conduct rigorous research, effectively analyze and present data, and contribute to evidence- based decision-making processes.	and novelity in research is of importance and ensures ethical professionali sm as it doesn't favour the manipulation and false represantatio n of data.		into the NEP, educational institutions can promote high-quality research by equipping students with robust research methodologies, advanced data analysis techniques, and interdisciplinary problem-solving skills. This, in turn, fosters a research culture, promotes collaboration between academia and industry, and contributes to the achievement of SDG 18 by driving research excellence and innovation.	m be dd ed Co ur se s De ve lo p m en t
U n i t I V	By studying and applying the concepts covered in Unit IV, individuals gain skills in experimental design, regression modeling, and statistical analysis using popular software tools. These skills are applicable across various industries and research fields, addressing global needs by enabling more efficient processes,	Overall, Unit IV contributes to skill development by equipping individuals with the necessary tools and knowledge to design experiments, analyze data, and make evidence-based decisions. These skills have broad applicability across industries and research fields, enabling individuals to address		<ul> <li>SDG 9: Industry, Innovation, and Infrastructure: Non-parametric tests and research methodology play a vital role in promoting innovation and improving infrastructure. By conducting research studies</li> </ul>	Promoting High-quality research (18.1-18.9) By incorporating Unit IV into the NEP, educational institutions can promote high-quality research by equipping students with robust research methodologies, advanced data analysis techniques, and interdisciplinary problem-solving skills. This, in turn, fosters a	Sk ill E m be dd ed Co ur se s De ve



	reliable predictions, and evidence-based decision- making. The practical knowledge gained through this unit equips individuals to tackle complex challenges and contribute to advancements in fields such as manufacturing, healthcare, and environmental sustainability.	global needs by improving processes, making accurate predictions, and contributing to advancements in various domains.	and analyzing data using non- parametric tests, industries can identify trends, patterns, and relationships, leading to innovation in product development, process optimization, and infrastructure planning.	research culture, promotes   la collaboration between p academia and industry, and m contributes to the e achievement of SDG 18 by t driving research excellence and innovation.	n en
U n i t V	By studying and applying the concepts covered in Unit V, individuals gain skills in designing experiments, analyzing complex systems, and optimizing processes. These skills are valuable in addressing global needs by improving efficiency, reducing waste, enhancing product quality, optimizing resource utilization, and finding optimal solutions to complex problems in diverse fields such as manufacturing, healthcare, agriculture, and	Overall, Unit V in skill development equips individuals with valuable skills in experimental design, analysis, and optimization. These skills are transferable and applicable across various industries and research - fields, allowing individuals to address complex problems, optimize processes, and make data- driven decisions. Mastery of these concepts contributes to skill development by fostering critical thinking, problem-	<ul> <li>Responsible Consumption and Production:</li> <li>The application of experimental design techniques</li> <li>promotes responsible consumption and production.</li> <li>By using factorial design and response surface methodology, industries can</li> </ul>	research (18.1-18.9) By incorporating Unit V into the NEP, educational institutions can promote high-quality research by equipping students with robust research methodologies, advanced data analysis techniques, and interdisciplinary problem-solving skills. This, in turn, fosters a research culture, promotes collaboration between academia and industry, and contributes to the	E m be dd dd Co ur se s De ve o p



environmental sustainability.	solving, and efficiency in experimental design and analysis.		utilization, reduce waste, and improve the quality and efficiency of production processes, aligning with the principles of sustainable consumption and production.	driving research excellence and innovation.	t
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Unit	Relevance to the local. national.	ean, na egional	global developmental needs		Relevance To the	Employability/ Entrepreneurship	/ Škili Development	Relevance to the	ional Gender Values	Environment & Sustainability		SDG	NEP	POE/4 <sup>th</sup> IR
BP 802 T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment &			



Unit I	 	Provides basic understanding of public health, epidemiology, preventive care, and other social health- related ideas.	Become well aware of current difficulties with pharmaceuticals and health worldwide.	 	Promote the functions played by health professionals in public health initiatives.	 	Improve public health by providing services that contribute to the prevention, treatment and management of the disease.	 Ensu re healt hy lives and prom ote well- being for all at all ages (SD	 Global educatio n policy, Skill develop ment
Unit II	 		Imparttheknowledgeonpreventionandcontrolofdiseasesalongwiththeirpreventiveandcurativemedicinesavailable.iter	 	Develops the knowledge, skills, abilities, to use medicines in society in a scientific way	 	Encouraging patients to have healthy lives, advice on stress management and mental health, and they recommend seeking the appropriate medical help when necessary.	 G3) Ensu re healt hy lives and prom ote well- being for all at all ages (SD G3)	 Global educatio n policy, Skill develop ment



Unit III	 	Imparts knowledge about the aims, operations, and results of national health programmes to achieve the objective of Health for all	 	 Brings the potential to solve new global health concerns like managing acute and chronic illnesses and health literacy	 	Provides patient care services that optimize the use of medication and promotes health, wellness, and disease prevention	 Ensu re healt hy lives and prom ote well- being for all at all ages (SD G3)	 Global educatio n policy, Skill develop ment
Unit IV		Create awareness of National health intervention programmes available in India	 	Develop a critical perspective based on recent advancements in healthcare.	 	Helps in equity, dignity, informed decision- making, health and well- being, and social justice	 Ensu re healt hy lives and prom ote well- being for all at all ages (SD G3)	 Global educatio n policy, Skill develop ment
Unit v	 	Examine other approaches to	 	 Control/eradication of contagious	 	Ensure access to healthcare, provide	 Ensu re	 Global educatio
		resolving difficulties with health and		diseases, improvement of		dignified living conditions, and	healt hy	n policy, Skill



pharmaceuticals	environmental sanitation, improving the standard of nutrition, control of population and promotion of rural health	empower individuals with knowledge and skills for better health and well-being.	lives develop and ment prom ote well- being for all at
			all at all ages
			(ŠD G3)

Unit eff	ational, global 1 needs	Co the // ship/ nent	o the Ethics, Human onment ity			
nce t	n menta menta	nce T yability reneur evelopr evelopr	nce t sional 5, Envir- ainabili			h IR
Releva	local, regiona develop	Releva Employ Skill D.	Releva Gender Values & Sust	SDG	NEP	POE/4



BP8 05E T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Students will be able to understand importance safety monitoring globally and also international terminologies used in this process.	By acquiring knowledge and experience in pharmacovigilanc e, individuals can position themselves for a wide range of rewarding career opportunities within the healthcare and pharmaceutical sectors.							SDG 3	(11. 1- 11.1 3)	Technical Skills that match Industry Needs/ Employabil ity
Unit II		-	-	Students will have understanding of International standards for classification of diseases and drugs, which is	By acquiring proficiency in drug dictionaries, coding systems, and the establishment of pharmacovigilanc							SDG 3	(17. 1- 17.5 )	Technical Skills that match Industry Needs/Codi ng



			essential for pharmacovigilance professionals to effectively contribute to drug safety monitoring, regulatory processes, and public health protection on a global scale.	e programs, individuals can enhance their employability in the field of pharmacovigilanc e.						
Unit III	-	-	Students will gain necessary knowledge and skills, pharmacovigilance education which will contribute to the overall safety and effectiveness of vaccines, thereby protecting public health on a global scale.	Education and expertise in vaccine safety surveillance, pharmacovigilanc e methods, and communication can significantly enhance employability in the field				SDG 3	(17. 1- 17.5 )	Technical Skills that match Industry Needs/ Employabil ity
Unit IV	-	-	. Students will expertise methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle & ICH guidelines for ICSR, PSUR, expedited reporting,	Education in safety data generation and ICH guidelines for pharmacovigilanc e enhances employability by ensuring regulatory compliance.		Students will understand ethical considerations related to patient confidentiality, data protection, and the responsible use of information	SDG 3		(17. 1- 17.5 )	Technical Skills that match Industry Needs/ Project



	pharmacovigila planning	ance					
Unit v	will haveunderstandunderstandiwill develop sng CDSCOfor Drug saguidelinesevaluationandspecial popularpharmacovipharmacogenogilanceat s of ADRs, &	fety cs, drug safety in evaluation in tion, special mic populations,		SDC	1	17.	Technical Skills that match Industry Needs/ Internship

