



K.R. MANGALAM UNIVERSITY



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 embarks 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, pharmaceuticals, 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



Program Scheme

Semester-I					
Course code	Course Title	L	T	P	C
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

Semester-II					
Course code	Course Title	L	T	P	C
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		32	4		29



Semester-III					
Course code	Course Title	L	T	P	C
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		12	4	16	24

Semester-IV					
Course code	Course Title	L	T	P	C
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		15	5	16	28



Semester-V					
Course code	Course Title	L	T	P	C
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	T	P	C
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
Total		18	5	12	30

Semester-VII					
Course code	Course Title	L	T	P	C
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	T	P	C
BP801T	Biostatistics and Research Methodology	3	1		4
BP802T	Social and Preventive Pharmacy	3	1		4
BP803ET	Pharma Marketing Management	3 + 3 = 6	1 + 1 = 2		4 + 4 = 8
BP804ET	Pharmaceutical Regulatory Science				
BP805ET	Pharmacovigilance				
BP806ET	Quality Control and Standardization of Herbals				
BP807ET	Computer Aided Drug Design				
BP808ET	Cell and Molecular Biology				
BP809ET	Cosmetic Science				
BP810ET	Experimental Pharmacology				
BP811ET	Advanced Instrumentation Techniques				
BP812ET	Dietary Supplements and Nutraceuticals				
BP813PW	Project Work		-	12	6
Total		12	4	12	22



CO-PO/PSO Mapping

Semester-I

BP 101T	Human Anatomy And Physiology-I	L	T	C
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 student should be able to:				
<ol style="list-style-type: none">1. Explain the gross morphology, structure and functions of various organs of the human body2. Describe the various homeostatic mechanisms and their imbalances3. Identify the various tissues and organs of different systems of human body4. Perform the various experiments related to special senses and nervous system5. Appreciate coordinated working pattern of different organs of each system				
Course Outcomes (CO)				
CO1. This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body.				
CO2. It also helps in understanding both homeostatic mechanisms				
CO3. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.				
CO4. It enlightens the students about the cells, various types of tissues in human body, skeleton system, skeletal 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

CO	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	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

BP102T	Pharmaceutical Analysis (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
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 Pharmacopoeia and other Regulatory agencies.
- CO5. Carryout various volumetric and electrochemical titrations.

Programme and Course Mapping

CO	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	-	-	-	-
CO4	3	1	-	-	3	3	-	2	1	-	2	-	3	-	-	-	-
CO5	3	-	-	-	3	3	-	1	-	-	3	-	2	-	-	-	-

1=lightly mapped

2= moderately mapped

3=strongly mapped



BP103T	Pharmaceutics-I (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Posology				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none">1. Know the history of profession of pharmacy2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations3. Understand the professional way of handling the prescription4. Preparation of various conventional dosage5. Introduction about novel drug delivery system					
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 Pharmacopoeia and other Regulatory agencies					
CO5. Provide Knowledge about metric system and calculation of dosages.					



Programme and Course Mapping																	
CO	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=lightly mapped 2= moderately mapped 3=strongly mapped																	

BP104T	Pharmaceutical Inorganic Chemistry (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutical Chemistry				
Co-requisites	Chemistry				
Course Objectives					
The course will enable the student-teacher to:					
<ol style="list-style-type: none"> 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.

Programme and Course Mapping

CO	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=lightly mapped

2= moderately mapped

3=strongly mapped



BP-105T	Communication Skills (Theory)												L	T	P	C	
Version 2.0													2	0	0	2	
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																	
CO3. Develop Leadership qualities and essentials																	
CO4. Develop confidence in pursuing interdisciplinary																	
Programme and Course Mapping																	
CO	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	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= moderately mapped 3=strongly mapped																	

BP106 RBT	REMEDIAL BIOLOGY (Theory)	L	T	P	C
Version 2.0		2	0	0	2
Total Contact Hours	30 Hrs				
Pre-requisites/Exposure	Biology				
Co-requisites	Biology				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none"> 1. know the classification and salient features of five kingdoms of life 2. understand the basic components of anatomy & physiology of plant 3. know understand the basic components of anatomy & physiology animal with special reference to human 					
Course Outcomes (CO)					
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.																		
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	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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP106 RMT	Remedial Mathematics (Theory)	L	T	P	C
Version 2.0		2	0	0	2
Total Contact Hours	30 Hrs				
Pre-requisites/Exposure	Biology				
Co-requisites	Biology				
Course Objectives					
The course will enable the student-teacher to:					
<ol style="list-style-type: none"> 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

Course Outcomes (CO)

CO1. To learn and understand the advance mathematics and its implementation in pharmacy

CO2. It provides knowledge of fraction and its implementation in pharmacy

CO3. It provides knowledge of analytical geometry and calculus

CO4. It helps in understanding the matrices and determinant

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	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO2	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO3	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO4	3	2	3	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped 2= moderately mapped 3=strongly mapped

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



Co-requisites		Experimental Pharmacology																
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Practical physiology is complimentary to the theoretical discussions in Physiology. 2. Practical allows the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. 3. This is helpful for developing an insight into human anatomy and physiology. 																		
Course Outcomes (CO)																		
<p>CO1. To learn and understand the components of living world, structure and functional system of plant kingdom.</p> <p>CO2. It provides knowledge about blood, their composition, function and coagulation factor.</p> <p>CO3. To learn the about bones with special reference to human.</p> <p>CO4. Provide practical knowledge of biological system and human anatomy</p>																		
Programme and Course Mapping																		
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	3	2	-	2	2	2	3	3	3	3	-	-	-	-
CO2	3	3	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	-	-	-	-
<p style="text-align: center;">1=lightly mapped 2= moderately mapped 3=strongly mapped</p>																		

BP 108P	PHARMACEUTICAL ANALYSIS (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Pharmaceutical Analysis				
Co-requisites	Pharmaceutical chemistry				
Course Objectives					
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 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 					
Course Outcomes (CO)					
<p>CO1. This subject is designed to impart fundamental knowledge on pharmaceutical preparations.</p> <p>CO2. The subject provides the basic knowledge required to understand the various disciplines of Analysis.</p> <p>CO3. This subject deals with the monographs of inorganic drugs and pharmaceuticals.</p> <p>CO4. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopeia and other Regulatory agencies.</p>					



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

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	3	3	2	2	3	2	-	2	2	2	3	3	3	-	-	-	-	-
CO2	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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP 109P	Pharmaceutics-I (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Pharmaceutics				

Course Objectives

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 Pharmacopoeia and other Regulatory Agencies.

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

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	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=strongly mapped



BP 110P	Pharmaceutical Inorganic Chemistry (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Inorganic chemistry				
Co-requisites	Pharmaceutical chemistry				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none">1. To Know the history of Pharmacopoeia2. To know the sources of impurities and methods to determine the impurities in pharmaceuticals3. Understand the medicinal and pharmaceutical importance of inorganic compounds4. Preparation of different category of pharmaceutical inorganic compounds5. Analysis of pharmaceutical compounds					
Course Outcomes (CO)					
CO1. This subject is designed to impart fundamental knowledge on pharmaceutical preparations.					
CO2. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopoeia and other Regulatory Agencies.					
CO4. Provide practical learning of impurity test in pharmaceuticals					
CO5. Provide Knowledge of calculation involved pharmaceutical chemistry subject					



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	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=strongly mapped																		

BP111P	Communication skills – Practical	L	T	P	C
Version 2.0		0	0	2	1
Total Contact Hours	30 Hrs				
Pre-requisites/Exposure	Communication Skills				
Co-requisites	Communication Skills				
Course Objectives					
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 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																		
CO	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	T	P	C
Version 2.0		0	0	2	1
Total Contact Hours	30 Hrs				
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.

Course Outcomes (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

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	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	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	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 style="list-style-type: none">1. Explain the gross morphology, structure and functions of various organs of the human body.2. Describe the various homeostatic mechanisms and their imbalances.3. Identify the various tissues and organs of different systems of human body.4. Perform the hematological tests like blood cell counts, hemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.5. Appreciate coordinated working pattern of different organs of each system.6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.					
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

CO	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=lightly mapped

2= moderately mapped

3=strongly mapped



BP202T	Pharmaceutical Organic Chemistry –I (Theory)	L	T	P	C													
Version 2.0		3	1	0	4													
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Organic chemistry																	
Co-requisites	Pharmaceutical Chemistry																	
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 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 Structure, reactions and function of alkyl halides. CO4. Explain the nucleophilic addition reactions. CO5. Explain the structure, reaction and effect of various groups acid derivatives																		
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	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= moderately mapped 3=strongly mapped																		



BP203T	Biochemistry (Theory)										L	T	P	C				
Version 2.0											3	1	0	4				
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Chemistry																	
Co-requisites	Chemistry and biology																	
Course Objectives																		
The course will enable the student-teacher to:																		
1. 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.																		
Course Outcomes (CO)																		
On completion of this course, the student-teacher will be able to:																		
CO1. Explain fundamental information related to the structure, function and significance of biomolecules.																		
CO2. Explain various metabolic pathways based on glucose.																		
CO3. Explain lipids oxidation, catabolism, anabolism and related diseases.																		
CO4. Explain biosynthesis and catabolism of purine and pyrimidine nucleotides.																		
CO5. Explain enzyme kinetics and its various applications.																		
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	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= moderately mapped 3=strongly mapped																		



BP204T	Pathophysiology (Theory)					L	T	P	C									
Version 2.0						3	1	0	4									
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Cellular and molecular Biology																	
Co-requisites	Chemistry and biology																	
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Describe the etiology and pathogenesis of the selected diseases. 2. Understanding of various types of injuries encountered during life. 3. Know the causatives organism of various diseases. 4. Study about STDs 																		
Course Outcomes (CO)																		
<p>CO1. Learn about the basic principles of Cell injury and Adaptation.</p> <p>CO2. Understand the Pathophysiology of heart disease and their complication.</p> <p>CO3. Understand the Pathophysiology of disease related to respiratory and endocrine system.</p> <p>CO4. Understand the Pathophysiology of Disease related to gastrointestinal, Alzheimer's and cancer disease.</p> <p>CO5. Understand the Pathophysiology of Sexually transmitted diseases.</p>																		
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	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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP205T	Computer Applications in Pharmacy (Theory)	L	T	P	C
Version 2.0		3	0	0	3
Total Contact Hours	25 Hours				
Pre-requisites/Exposure	Computer sciences				
Co-requisites	Computer sciences				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none"> 1. Know the various types of application of computers in pharmacy. 2. Know various types of databases. 3. Know various applications of databases in pharmacy. 					
Course Outcomes (CO)					
On completion of this course, the student-teacher will be able to: CO1. Learn about the basics of computer application in pharmacy. CO2. Understand various types of databases. CO3. Understand the applications of different types of databases in pharmacy. CO4. Explain the role of computers for data analysis in Preclinical development.					
Programme and Course Mapping					



CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO4	PSO 5	PSO6
CO1	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=lightly mapped 2= moderately mapped 3=strongly mapped																		



BP206T	Environmental Sciences (Theory)											L	T	P	C			
Version 2.0												3	0	0	3			
Total Contact Hours	30 Hours																	
Pre-requisites/Exposure	Environment studies																	
Co-requisites	Social and cultural factors																	
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Create the awareness about environmental problems among learners. 2. Impart basic knowledge about the environment and its allied problems. 3. Develop an attitude of concern for the environment. 4. Motivate learner to participate in environment protection and environment improvement. 5. Acquire skills to help the concerned individuals in identifying and solving environmental 																		
Course Outcomes (CO)																		
<p>CO1. To study of the environmental system and the status of its inherent or induced changes on organisms.</p> <p>CO 2. Strive to attain harmony with Nature</p> <p>CO3. Motivate learner to participate in environment protection and environment improvement.</p> <p>CO 4. To Impart basic knowledge about the environment and its allied problems</p>																		
Programme and Course Mapping																		
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO 1	PSO 2	PSO3	PSO 4	PSO5	PSO6



CO1																-	-	-	-	
CO2																	-	-	-	-
CO3																	-	-	-	-
CO4																	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongly mapped																				

BP207P	Human Anatomy And Physiology-I (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Pharmacology				
Co-requisites	Pathophysiology				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none"> 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.

Programme and Course Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	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= moderately mapped 3=strongly mapped																		

BP208P	Pharmaceutical Organic Chemistry –I (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Organic chemistry (Practical)				
Co-requisites	Chemistry				
Course Objectives					



The course will enable the student-teacher to:

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.

Programme and Course Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO1 2	PSO 1	PSO 2	PSO3	PSO 4	PSO 5	PS O6
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped

2= moderately mapped

3=strongly mapped



BP209P	Biochemistry (Practical)											L	T	P	C			
Version 2.0												-	-	4	2			
Total Contact Hours	60 Hours																	
Pre-requisites/Exposure	Chemistry																	
Co-requisites	Chemistry and biology																	
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. 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. 																		
Course Outcomes (CO)																		
<p>On completion of this course, the student-teacher will be able to:</p> <p>CO1. Learn about the basic principles of Biochemistry</p> <p>CO2. Understand the Pathophysiology of Urine.</p> <p>CO3. Understand the basics about Protein Carbohydrate, Fats</p>																		
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	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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP210P	Computer application in pharmacy	L	T	P	C
Version 2.0		1	1	2	1
Total Contact Hours	0 Hours				
Pre-requisites/Exposure					
Co-requisites					

Sem-III

BP 301T	Pharmaceutical Organic Chemistry –II	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure					
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. 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.

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	-	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 mapped

2= moderately mapped

3=strongly mapped

BP 302T	Physical Pharmaceutics-I (Theory)	L	T	P	C
Version 2.0		3	1	0	4



Total Contact Hours	45 Hrs																	
Pre-requisites/Exposure																		
Co-requisites	-																	
Course Objectives																		
The course will enable the student-teacher to:																		
1. Understand various physicochemical properties of drug molecules in the designing the dosage forms																		
2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations																		
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.																		
Course Outcomes (CO)																		
CO 1. The course deals with the various physicochemical properties																		
CO 2. This subject explains the principles involved in dosage forms/formulations.																		
CO 3. The theory and practical components of the subject helps the student to get a better insight into various areas of formulation research and development.																		
CO 4. It helps to understand the various techniques and methods involved in micromeritics.																		
CO 5. It is also useful for the demonstration of physicochemical properties in the formulation development.																		
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	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-
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=lightly mapped 2= moderately mapped 3=strongly mapped

BP 303T	Pharmaceutical Microbiology (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Microbiology				
Co-requisites	Pharmaceutics				

Course Objectives

The course will enable the student-teacher to:

1. Understand methods of identification, cultivation and preservation of various microorganisms
2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry
3. Learn sterility testing of pharmaceutical products.
4. Carried out microbiological standardization of Pharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries.

Course Outcomes (CO)

- CO1. This subject is designed to study the morphology, classification of microorganisms like bacteria, fungi and virus.
- CO2. This subject also helps the understanding of bacteria using staining techniques (simple, Gram's & Acid fast staining) and biochemical tests (IMViC).
- CO3. It also helps in understanding of sterility testing of pharmaceutical products.
- CO4. The subject provides the designing of aseptic area and methods for standardization of antibiotics, vitamins and amino acids.
- CO5. It also deals with the microbial spoilage, types, sources and methods in pharmaceutical industry.

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
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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 mapped 2= moderately mapped 3=strongly mapped																		

BP 304T	Pharmaceutical Engineering (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure					
Co-requisites	Pharmaceutics				
Course Objectives					
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 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)					



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.

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	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 mapped

2= moderately mapped

3=strongly mapped

BP 305P	Pharmaceutical Organic Chemistry II – Practical	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure					
Co-requisites	Pharmaceutical chemistry				

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. 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

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	-	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 mapped

2= moderately mapped

3=strongly mapped

BP 306P	Physical Pharmaceutics-I (Practical)	L	T	P	C
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Version 2.0		0	0	4	2													
Total Contact Hours	60 Hrs																	
Pre-requisites/Exposure																		
Co-requisites	Pharmaceutics																	
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Understand various physicochemical properties of drug molecules involved in the designing of dosage forms 2. Know the principles of chemical kinetics and to use them for stability testing and determination of expiry date of formulations. 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms 																		
Course Outcomes (CO)																		
<p>CO 1. The course deals with the study of various physicochemical properties, and principles involved in manufacturing dosage forms/formulations.</p> <p>CO 2. Practical components of the subject help the student to get a better insight into various areas of formulation research and development,</p> <p>CO 3. It also helps in understanding principles of chemical kinetics and to use them in determining stability of pharmaceutical dosage forms.</p> <p>CO 4. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.</p> <p>CO 5. This subject also helps in learning physiochemical properties of individual dosage forms.</p>																		
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	2	-	1	-	2	2	-	-	-	-	-	1	2	2	-	-	-	-



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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP 307P	Pharmaceutical Microbiology (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure					
Co-requisites	-				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none"> 1. Understand methods of identification, cultivation and preservation of various microorganisms 2. To understand the importance and implementation of sterilization in pharmaceutical processing and industry 3. Learn sterility testing of pharmaceutical products. 4. Carried out microbiological standardization of Pharmaceuticals. 5. Understand the cell culture technology and its applications in pharmaceutical industries. 					
Course Outcomes (CO)					



- 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

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	-	-	-	-	-	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 mapped 2= moderately mapped 3=strongly mapped

BP 308P	Pharmaceutical Engineering (Practical)	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure					
Co-requisites	-				
Course Objectives					



The course will enable the student-teacher to:

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.

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	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 mapped 2= moderately mapped 3=strongly mapped																		

Sem-IV

BP401T	Pharmaceutical Organic Chemistry III– Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hours				
Pre-requisites/Exposure	Organic Chemistry				
Co-requisites	Pharmaceutical Organic Chemistry-III				
Course Objectives					
The course will enable the student-teacher to:					
1. Understand the methods of preparation and properties of organic compounds					
2. Explain the stereo chemical aspects of organic compounds and stereo chemical reactions					
3. Know the medicinal uses and other applications of organic compounds					
Course Outcomes (CO)					
On completion of this course, 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.

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	3	-	-	-	-	3		1	-	-	-	-	-	-	-	-	-	-
CO2	-	-	3	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
CO3	-	1	-	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped

2= moderately mapped

3=strongly mapped

BP402T	Medicinal Chemistry I – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hours				
Pre-requisites/Exposure	Chemistry of drugs				
Co-requisites	Pharmaceutical Chemistry				
Course Objectives					
The course will enable the student-teacher to:					
1. Understand the chemistry of drugs with respect to their pharmacological activity					



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.

Programme and Course Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	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 mapped 2= moderately mapped 3=strongly mapped

BP403T	Physical Pharmaceutics II – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 hours				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Physical Pharmaceutics				



Course Objectives

The course will enable the student-teacher to:

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Outcomes (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.

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	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	1	-	-	-	-	-	-	-	3	-	3	-	-	-	-	-	-
CO3	-	-	1	-	-	2	-	3	-	-	-	-	1	-	-	-	-	-
CO4	-	2	-	-	-	-	3	-	3	-	3	-	-	1	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped 2= moderately mapped 3=strongly mapped

BP404T	Pharmacology I – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hours				



Pre-requisites/Exposure	Human anatomy and Physiology																	
Co-requisites	Pathophysiology																	
Course Objectives																		
<p>Upon completion of this course the student should be able to:</p> <ol style="list-style-type: none"> 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. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases. 4. Observe the effect of drugs on animals by simulated experiments 5. Appreciate correlation of pharmacology with other bio medical sciences 																		
Course Outcomes (CO)																		
<p>CO1. Students would have understood the pharmacological actions of different categories of drugs 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</p>																		
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	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	2	-	3	-	-	-	-	-	-	-	-	-	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	2	-	-	-	-	-	-	3	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongly mapped																		



BP405T	Pharmacognosy and Phytochemistry I– Theory										L	T	P	C				
Version 2.0											3	1	0	4				
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Pharmacognosy																	
Co-requisites	Pharmacognosy																	
Course Objectives																		
Upon completion of this course the student should be able to																		
1. To know the techniques in the cultivation and production of crude drugs 2. To know the crude drugs, their uses and chemical nature 3. Know the evaluation techniques for the herbal drugs 4. To carry out the microscopic and morphological evaluation of crude drugs																		
Course Outcomes (CO)																		
CO1. Student will be aware of the techniques in the cultivation and production of crude drugs CO2. Have Knowledge of the crude drugs, their uses and chemical nature CO3. Know the evaluation techniques for the herbal drugs CO4. Able to carry out the microscopic and morphological evaluation of crude drugs																		
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	1	-	2	-	3	-	-	3		3	-	-	-	1	-	-	-	-



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

BP406P	Medicinal Chemistry I – Practical	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Medicinal Chemistry				
Co-requisites	Medicinal Chemistry				
Course Objectives					
Upon completion of this course the student should be able to					
1. Understand the chemistry of drugs with respect to their pharmacological activity					
2. Understand the synthetic procedure and therapeutic value of drugs					
3. Know the mechanism of reaction and Structural Activity Relationship (SAR) of different class of drugs					
4. Understand methods and basics required for the assay of some drugs					
Course Outcomes (CO)					
CO1. It imparts the knowledge of synthesizing, characterization and purification of medicinal compounds and intermediates.					
CO2. To analyze the selected drugs present in dosage forms and to determine the percentage purity.					
CO3. Able to study physiochemical properties of drug.					



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	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	2	-	2	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP407P	Physical Pharmaceutics II – Practical	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Physical Pharmaceutics- I				
Co-requisites	-				
Course Objectives					
Upon completion of this course the student should be able to					
1. Understand various physicochemical properties of drug molecules in the designing the dosage forms					
2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations					
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms					
Course Outcomes (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.

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	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3		3	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped 2= moderately mapped 3=strongly mapped

BP408P	Pharmacology I – Practical	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Pharmacology				
Co-requisites	Pathophysiology				
Course Objectives					
Upon completion of this course 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 mapped

2= moderately mapped

3=strongly mapped

BP409P	Pharmacognosy and Phytochemistry I (Practical)	L	T	P	C
Version 2.0		0	0	4	2



Total Contact Hours	60 Hours																	
Pre-requisites/Exposure																		
Co-requisites	Pharmacognosy																	
Course Objectives																		
Upon completion of this course the student should be able to																		
1. Understand various physicochemical properties of drug molecules in the designing the dosage forms 2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations 3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.																		
Course Outcomes (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.																		
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	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongly mapped																		



Semester-V

BP501T	Medicinal Chemistry-II (Theory)	L	T	P	C													
Version 2.0		3	1	0	4													
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Medicinal Chemistry																	
Co-requisites	Chemical Synthesis																	
Course Objectives																		
Upon completion of the course the student shall be able to																		
1. Understand the chemistry of drugs with respect to their pharmacological activity																		
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs																		
3. Know the Structural Activity Relationship of different class of drugs																		
4. Study the chemical synthesis of selected drugs																		
Course Outcomes (CO)																		
CO1. Get familiar with the chemistry and synthesis of medicinal substances.																		
CO2. Understand the concept of structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs.																		
CO3. Learn about hormone related drugs.																		
CO4. To impart fundamental knowledge on the structure, chemistry, and therapeutic value of drugs.																		
CO5. Acquire knowledge regarding Cardiovascular drugs and their structures																		
Programme and Course Mapping																		
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	-	-	-	-	-	-
CO4	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
1=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP502T	Industrial Pharmacy I– Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hours				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Industrial Pharmacy				
Course Objectives					
Upon completion of the course the student shall be able to: <ol style="list-style-type: none"> 1. Know the various pharmaceutical dosage forms and their manufacturing techniques. 2. Know various considerations in development of pharmaceutical dosage forms. 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

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	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=lightly mapped 2= moderately mapped 3=strongly mapped

BP503T	Pharmacology II – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hours				
Pre-requisites/Exposure	Pharmacology-I				
Co-requisites	HAP-II and Pathophysiology				
Course Objectives					



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

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1			2			3											
CO2		1				2					3							
CO3			1		2				3			3		3				
CO4		1	1	2														
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1=lightly mapped

2= moderately mapped

3=strongly mapped



BP504T	Pharmacognosy and Phytochemistry II– Theory										L	T	P	C				
Version 2.0											3	1	0	4				
Total Contact Hours	45 Hrs																	
Pre-requisites/Exposure	Pharmacognosy & Phytochemistry-I																	
Co-requisites	Remedial Biology																	
Course Objectives																		
<p>Upon completion of the course, the student shall be able -</p> <ol style="list-style-type: none"> 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 																		
Course Outcomes (CO)																		
<p>CO1. Impart the students the knowledge of how the secondary metabolites are produced in the crude drugs. CO2. Get familiar with isolation and identification and industrially production of secondary metabolites. CO3. Understand study of producing the plants and phytochemicals through plant tissue culture. CO4. To give knowledge about application of latest analytical techniques. CO5. To understand basic principles of traditional system of medicine.</p>																		
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	1			2				2						1				
CO2									2									
CO3		1	1	2	2							2		2				
CO4			1				2											
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



1=lightly mapped 2= moderately mapped 3=strongly mapped

BP505T	Pharmaceutical Jurisprudence – Theory										L	T	P	C				
Version 2.0											3	1	0	4				
Total Contact Hours	45 Hours																	
Pre-requisites/Exposure	Jurisprudence																	
Co-requisites	Rules and Regulation																	
Course Objectives																		
<p>Upon completion of this course the student should be able to understand:</p> <ol style="list-style-type: none"> 1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals. 2. Various Indian pharmaceutical Acts and Laws. 3. Regulatory authorities & agencies governing the manufacture & sale of Pharmaceuticals. 4. The code of ethics during the pharmaceutical practice 																		
Course Outcomes (CO)																		
<p>CO1. This subject is designed to impart fundamental knowledge on Various Act.</p> <p>CO2. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.</p> <p>CO3. This subject deals with MTP act.</p> <p>CO4. Provide Knowledge about Indian Pharmacopoeia, British Pharmacopoeia and other Regulatory agencies.</p> <p>CO5. Provide Knowledge about Narcotic and Psychotropic substance act.</p>																		
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			2		2		2				3						
CO2	1		1	2		3			2		3						
CO3									2								
CO4	3		1			3					1	3					
CO5		2			2		1		1								
1=lightly mapped 2= moderately mapped 3=strongly mapped																	

BP506P	Pharmacy I – Practical	L	T	P	C
Version 2.0		0	0	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	Pharmaceutics				
Course Objectives					
The course will enable the student-teacher to:					
1. To get familiarize with technology and production of pharmaceutical dosage form.					
Course Outcomes (CO)					
<p>CO1: Get familiarize with technology and production of pharmaceutical dosage form.</p> <p>CO2: Learn Elementary Idea on Quality control test of (as per IP) marketed tablets and capsules Inorganic Qualitative Analysis.</p> <p>CO3: Learn to prepare and evaluate tablets, capsule, cold / vanishing cream, ointment.</p> <p>CO4: Learn to test containers.</p>					



CO5: Learn to prepare eye drops and eye ointment.

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	1					1						3						
CO2		1		2				2										
CO3							1				3							
CO4		1			1								1					
CO5	2					3		2										

1=lightly mapped 2= moderately mapped 3=strongly mapped

BP507P	Pharmacology II – Practical	L	T	P	C
Version 2.0		-	-	4	2
Total Contact Hours	60 Hours				
Pre-requisites/Exposure	Pharmacology-I (Practical)				
Co-requisites	Human Anatomy and Physiology				

Course Objectives

This subject will apprise the students with the following:

1. To get familiar with various effects of drugs on human body.
2. To demonstrate laboratory techniques and animal experiments by simulated experiments by softwares and videos

Course Outcomes (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.

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	1																	
CO2			1		3	2			2		3		3					
CO3				1														
CO4		1				2												
CO5	1				1					2								

1=lightly mapped 2= moderately mapped 3=strongly mapped

BP508P	Pharmacognosy and Phytochemistry II – Practical	L	T	P	C
Version 2.0		-	-	4	2
Total Contact Hours	60 hours				
Pre-requisites/Exposure	Pharmacognosy & Phytochemistry-I Practical				
Co-requisites	Remedial Biology Practical				

Course Objectives

Upon completion of the course, 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

Course Outcomes (CO)

- 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.

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	1		2			2					2							
CO2		3						1										
CO3	1				3			1			2							
CO4														2				
CO5	2			2						1								

1=lightly mapped

2= moderately mapped

3=strongly mapped



Semester-VI

BP601T	Medicinal Chemistry-III (Theory)	L	T	P	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 student-teacher to: <ol style="list-style-type: none">1. Understand the importance of drug design and different techniques of drug design.2. Understand the chemistry of drugs with respect to their biological activity.3. Know the metabolism, adverse effects and therapeutic value of drugs.4. Know the importance of SAR of drugs.					
Course Outcomes (CO)					
 CO 1. Understand fundamental knowledge on the structure, function and significance of Drugs. CO 2. discuss various mechanism of action of drugs CO 3. Provide knowledge of Synthesis and Metabolism of drugs. CO 4. Provide knowledge of Structure Activity Relationships (SAR) therapeutic uses of drugs. CO 5. Provide knowledge of marketed preparation.					



Programme 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								1
CO4											3	3		
CO5	2											3		
1=lightly mapped 2= moderately mapped 3=strongly mapped														

BP602T	Pharmacology III – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmacology-II				
Co-requisites	HAP-II and Pathophysiology				
Course Objectives					
The course will enable the student-teacher to:					
<ol style="list-style-type: none"> 1. Get familiar with the basic biochemical aspects of human body and its relation to diseases. 2. Understand various drugs used for various ailments. 3. Understand mechanism of action adverse drug reactions. 4. Understand the basic strategies to 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

Programme 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								
CO4			1								3	3	2	
CO5														
1=lightly mapped 2= moderately mapped 3=strongly mapped														

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



Course Objectives

The course will enable the student-teacher to:

1. Know to evaluate the quality of raw material.
2. Know the guidelines for quality of herbal drug.
3. Know about herbal cosmetics, natural sweeteners etc.
4. Know about modern concepts such as nutraceuticals

Course Outcomes (CO)

CO 1. Understand raw material as source of herbal drugs from cultivation to herbal drug product.

CO 2. Know the WHO and ICH guidelines for evaluation of herbal drugs.

CO 3. Know the herbal cosmetics, natural sweeteners, nutraceuticals.

CO 4. Appreciate patenting of herbal drugs, GMP.

CO 5. Know about the raw materials used in Herbal cosmetics, and the various excipients used in Herbal cosmetics and to know the significance of nutraceuticals.

Programme and Course Mapping

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



1=lightly mapped 2= moderately mapped 3=strongly mapped

BP604T	Biopharmaceutics And Pharmacokinetics- (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites					
Course Objectives					
The course will enable the student-teacher to:					
1. Understand the basic concepts in Biopharmaceutics and Pharmacokinetics and their significance.					
2. Understand the use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.					
3 Understand the concepts of bioavailability and bioequivalence of drug products and their significance.					
Course Outcomes (CO)					
CO 1. Understand the basic concepts in Biopharmaceutics and Pharmacokinetics and their significance.					
CO 2. Understand the Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.					
CO 3. Understand the concepts of bioavailability and bioequivalence of drug products and their significance.					
CO 4. Understand various pharmacokinetic parameters, their significance & applications					
Programme 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									2
CO3					3	3								
CO4	3											3		
1=lightly mapped 2= moderately mapped 3=strongly mapped														

BP605T	Pharmaceutical Biotechnology (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutical Microbiology				
Co-requisites	Pharmaceutics				
Course Objectives					
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Understand the importance of Immobilized enzymes in Pharmaceutical Industries 2. Genetic engineering applications in relation to production of pharmaceuticals 3. Importance of Monoclonal antibodies in Industries 4. Appreciate the use 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.

Programme 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					3	3								
CO4	3											3		
CO5											3	3		

1=lightly mapped

2= moderately mapped

3=strongly mapped

BP606T	Pharmaceutical Quality Assurance (Theory)	L	T	P	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.

Programme and Course Mapping

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=lightly mapped

2= moderately mapped

3=strongly mapped



BP607P	Medicinal Chemistry-III (Practical)	L	T	P	C
Version 2.0		-	-	4	2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Medicinal Chemistry				
Co-requisites	Medicinal Chemistry				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none">1. Understand the importance of drug design and different techniques of drug design.2. Understand the chemistry of drugs with respect to their biological activity.3. Know the metabolism, adverse effects and therapeutic value of drugs.4. Know the importance of SAR of drugs.					
Course Outcomes (CO)					
<p>CO 1. Understand fundamental knowledge on the structure, function and significance of Drugs.</p> <p>CO 2. Discuss various mechanism of action of drugs</p> <p>CO 3. Provide knowledge of Synthesis and Metabolism of drugs.</p> <p>CO 4. Provide knowledge of Structure Activity Relationships (SAR) therapeutic uses of drugs.</p> <p>CO 5. Provide knowledge of marketed preparation.</p>					



Programme 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					3	3								
CO4											3	3		
CO5												3		1
1=lightly mapped 2= moderately mapped 3=strongly mapped														

BP608P	Pharmacology-III (Practical)	L	T	P	C
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-teacher to:

1. Get familiar with the pre-clinical studies in animals
2. Know the animal handling techniques, methods of drugs administration.
3. Understand Dose calculation and administration 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



Course Outcomes (CO)														
<p>CO 1. Understanding pharmacology experiments demonstration by simulated experiments / videos.</p> <p>CO 2. Understand knowledge of dose calculation and acute oral toxicity in pharmacology experiments</p> <p>CO 3. Study various effects of drugs like anti-ulcer, GIT mobility and anti-allergic activity using various assay based on video recordings</p> <p>CO 4. Know the biostatistics methods in experimental pharmacology like ANOVA, Chi square test, Wilcoxon Signed Rank test)</p>														
Programme 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												2
CO3						3								
CO4												3		
CO5														
1=lightly mapped 2= moderately mapped 3=strongly mapped														

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



Course Objectives

The course will enable the student-teacher to:

1. Know to evaluate the quality of raw material.
2. Know the guidelines for quality of herbal drug.
3. Know about herbal cosmetics, natural sweeteners etc.
4. Know about modern concepts such as nutraceuticals

Course Outcomes (CO)

- CO 1.** Gain Practical knowledge of Preliminary phytochemical screening of crude drugs.
- CO 2.** Carry out Preparation and standardization of Herbal extracts in cosmetic formulation.
- CO 3.** Understand & study the monograph of various Herbal drugs.
- CO 4.** Determine the content of components like Aldehyde and alcohol
- CO 5.** Prepare Ayurvedic formulations

Programme 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								2
CO3									3					
CO4	3													
CO5	3													

1=lightly mapped

2= moderately mapped

3=strongly mapped



Sem-VII

BP 701 T	Instrumental Methods Of Analysis (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Analytical Chemistry				
Co-requisites	-				
Course Objectives					
The course will enable the student-teacher to: <ol style="list-style-type: none">1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis2. Understand the chromatographic separation and analysis of drugs.3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.					
Course Outcomes (CO)					
<p>CO1. This subject deals with the application of instrumental methods in qualitative analysis of drugs.</p> <p>CO2. This subject deals with the application of instrumental methods in quantitative analysis of drugs.</p> <p>CO3. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic techniques.</p> <p>CO4. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of chromatographic techniques.</p> <p>CO5. This also emphasizes on theoretical knowledge on modern analytical instruments that are used for drug testing.</p>					



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	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= moderately mapped 3=strongly mapped																		

BP 702 T	Industrial Pharmacy-II (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	-				
Course Objectives					
The course will enable the student-teacher to:					
<ol style="list-style-type: none"> 1. Know the process of pilot plant and scale up of pharmaceutical dosage forms 2. Understand the process of technology transfer from lab scale to commercial batch 3. Know different Laws and Acts that regulate pharmaceutical industry 4. Understand the approval process and regulatory requirements for drug 					
Course Outcomes (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.

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	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=lightly mapped 2= moderately mapped 3=strongly mapped

BP 703T	Pharmacy Practice (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmacology				
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

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	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=lightly mapped 2= moderately mapped 3=strongly mapped																		

BP 704 T	Novel Drug Delivery System – Theory	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmaceutics				
Co-requisites	-				

Course Objectives

The course will enable the student-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	PO7	PO8	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 2= moderately mapped 3=strongly mapped																		

BP 705 P	Instrumental Methods Of Analysis (Practical)	L	T	P	C
Version 2.0		0	0	4	2 2
Total Contact Hours	60 Hrs				
Pre-requisites/Exposure	Analytical Chemistry-I Practical				
Co-requisites					
Course Objectives					
The course will enable the student-teacher to:					
<ol style="list-style-type: none"> 1. Quantitative & Qualitative Analysis of drugs using various analytical instruments. 2. Demonstration of HPLC instrument 3. Separations of sugars and amino acids by chromatography. 					
Course Outcomes (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	PO7	PO8	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= moderately mapped 3=strongly mapped

BP 706PS	Practice School	L	T	P	C
Version 2.0		12	0	0	6
Total Contact Hours	80 Hrs				
Pre-requisites/Exposure					
Co-requisites					



Semester-VIII

BP801T	Biostatistics And Research Methodology-Theory										L	T	P	C				
Version 2.0											3	1	0	4				
Total Contact Hours	45 Hrs																	
Pre-requisites/Exposure																		
Co-requisites	Any analytical Software																	
Course Objectives																		
The course will enable the student-teacher to:																		
<ol style="list-style-type: none"> 1. Know the operation of M.S. Excel, SPSS, R and MINITAB ® , DoE (Design of Experiment) 2. Know the various statistical techniques to solve statistical problems. 3. Appreciate statistical techniques in solving the problems. 																		
Course Outcomes (CO)																		
<p>CO1.To establish a formulation helping to predict one variable in terms of the other that is, correlation and linear regression.</p> <p>CO2. To understand of Parametric and Non-Parametric models for developing relevant inferences on associated parameters</p> <p>CO3. To know advanced level topics in statistical inference on testing of statistical hypotheses for both randomized and non-randomized tests</p> <p>CO4. To use appropriate experimental designs to analyze the experimental data</p>																		
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	2			2	2							2	2					



CO2			2				2		2		2						
CO3	2			2	2							2	2				
CO4		2	2				2										
CO5																	
1=lightly mapped 2= moderately mapped 3=strongly mapped																	

BP 802 T	Social and Preventive Pharmacy (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Pharmacology				
Co-requisites	Remedial Biology				
Course Objectives					
The course will enable the student-teacher to:					
1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide. 2. Have a critical way of thinking based on current healthcare development. 3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues					
Course Outcomes (CO)					
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. To understand 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

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	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= moderately mapped

3=strongly mapped

BP 803 ET	Pharmaceutical Marketing Management (Theory)	L	T	P	C
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

Course Outcomes (CO)

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

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	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= moderately mapped

3=strongly mapped

BP 804 ET	Pharmaceutical Regulatory Science (Theory)	L	T	P	C
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Version 2.0		3	1	0	4													
Total Contact Hours	45 Hrs																	
Pre-requisites/Exposure	Pharmaceutics																	
Co-requisites	Regulatory Sciences																	
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Know about the process of drug discovery and development 2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 3. Know the regulatory approval process and their registration in Indian and International markets 																		
Course Outcomes (CO)																		
<p>CO1. This course is designed to impart the fundamental knowledge on the Origin, development, scope, objectives and nature of Pharmaceutical legislation in India.</p> <p>CO2. A study of regulatory aspects that affect drug product design, manufacture and distribution in India with special emphasis on the following Acts / Laws (with latest amendments)</p> <p>CO3. Need Product development stage documentation, factory procedures – Standard operating procedures (SOPs) and standard test Procedures (STPs).</p> <p>CO4. Regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia, UK etc.</p> <p>CO5. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products</p>																		
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	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					
CO5		2	2		2	2	2				2			2			
1=lightly mapped 2= moderately mapped 3=strongly mapped																	

BP805ET	Pharmacovigilance (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-requisites/Exposure	Toxicology study				
Co-requisites	ADR				
Course Objectives					
The course will enable the student-teacher to: 1 Why drug safety monitoring is important? 2. History and development of pharmacovigilance 3. National and international scenario of pharmacovigilance 4. Dictionaries, coding and terminologies used in pharmacovigilance 5. Detection of new adverse drug reactions and their assessment problems					
Course Outcomes (CO)					



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

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	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=lightly mapped

2= moderately mapped

3=strongly mapped

BP 806 ET	Quality Control And Standardization Of Herbals (Theory)	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Pre-	Herbal Drug Technology				



requisites/Exposure																		
Co-requisites		Pharmacognosy & Phytochemistry																
Course Objectives																		
<p>The course will enable the student-teacher to:</p> <ol style="list-style-type: none"> 1. Know WHO guidelines for quality control of herbal drugs 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 																		
Course Outcomes (CO)																		
<p>CO1. In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs like Moisture Content, Ash Values, Determination of Extractive Value, Swelling Index, Hemolytic Activity etc.</p> <p>CO2. The subject also provides an opportunity for the student to learn the quality assurance of crude drugs in herbal industry and follow the following guide line cGMP, GAP and GLP in traditional system of medicines.</p> <p>CO3. Knowledge about the Quality control of following guideline like EU and ICH guidelines.</p> <p>CO4. Knowledge about the stability testing of herbal medicines and application of various chromatographic techniques for evaluation of crude drugs.</p> <p>CO5. Regulatory requirement for development of herbal medicine as per WHO guide lines.</p>																		
Programme and Course Mapping																		
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	2		1	2	2		2		2			2	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=lightly mapped 2= moderately mapped 3=strongly mapped																		



BP 807 ET	Computer aided drug design	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 808 ET	Cell and molecular biology	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 809 ET	Cosmetic science	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					



BP 810 ET	Experimental Pharmacology	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					


BP 811 ET	Advanced instrumentation techniques	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					

BP 812 ET	Dietary supplements and nutraceuticals	L	T	P	C
Version 2.0		3	1	0	4
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					



BP 813 PW	Project work	L	T	P	C
Version 2.0		0	0	12	6
Total Contact Hours	45 Hrs				
Herbal Drug Technology					
Co-requisites					

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

<p>Unit</p>	<p>Relevance to the local, national, regional and global developmental needs</p>	 <p>K.R. MANGALAM UNIVERSITY</p> <p>Relevance To the Employability/ Entrepreneurship/ Skill Development</p>	<p>Semester-I</p> <p>Relevance to the Professional Ethical Values, Environment & Sustainability</p>	<p>SDG</p>	<p>NEP</p>	<p>POE/4th IR</p>
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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	-	-	-	-	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 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 (9.1-9.3)	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 (9.1-9.3)	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	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 Relevance to the local, national, regional and global developmental needs			
Local	Regional	National	Global	Relevance To the Employability/ Entrepreneurship/ Skill Development
Employability	Entrepreneurship	Skill Development	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability	SDG
Professional Ethics	Gender	Human Values	Environment & Sustainability	NEP
POE/4th IR				



Unit I	Empowerment of Local Workforce: Developing skills in pharmaceutical analysis at the local level empowers the workforce within the community.	Skilled professionals in pharmaceutical analysis can contribute to the development and growth of the regional pharmaceutical industry	National Drug Quality and Safety: Skilled professionals in pharmaceutical analysis play a vital role in ensuring the quality, safety, and efficacy of pharmaceutical products	-	-	-	Understanding the principles and applications of these techniques helps develop expertise in selecting and applying the appropriate analytical method for different pharmaceutical compounds .	-	-	-	-	I.b Create sound policy frameworks ... (SDG 1a)		Updated Curriculum
Unit II	Local Analytical Services and Consulting: Skilled professionals in pharmaceutical analysis can offer analytical	National Drug Quality and Safety: Skilled professionals in pharmaceutical analysis play a vital role in ensuring the quality, safety, and efficacy of pharmaceutical products circulating in the country.	Regulatory Compliance: National regulatory bodies responsible for drug approval and oversight can benefit from expertise in	Capacity Building and Knowledge Transfer: Sharing knowledge and	-	-	Laboratory Techniques : The paragraph mentions specific laboratory techniques associated with each method,	-	-	-	-	Ensure healthy lives and promote well-being	Quality Universities and Colleges : A New and	Internship Programs



	services and consulting to local pharmaceutical companies, healthcare institutions, and research organizations.		pharmaceutical analysis.	building capacity in pharmaceutical analysis globally enhances the capabilities of developing countries			such as the construction and working of electrodes, preparation of standard solutions, and handling of precipitates					g for all at all ages (SD G 3)	For ward-looking Vision for India's Higher Education System (9.1-9.3)	
Unit III	Their expertise enhances local research capabilities and supports the development of new pharmaceutical products	Public Health and Patient Safety: Skilled professionals in pharmaceutical analysis play a crucial role in ensuring the quality, safety, and efficacy of pharmaceutical products available in the country.	Pharmaceutical Industry Competitiveness: A strong foundation in pharmaceutical analysis at the national level can enhance the competitiveness of the	Global Collaborations and Partnerships: Global expertise in pharmaceutical analysis	-	-	Laboratory Techniques : The paragraph mentions specific laboratory techniques associated with each method, such as the	-	-	-	-	Skills for Decent Work (SD G 4.4)	Optimal Learning Environments and Support for	International Exchange Student Programs



	and technologies		domestic pharmaceutical industry.	facilitates collaborations and partnerships between countries, academic institutions, and pharmaceutical companies			construction and working of electrodes, preparation of standard solutions, and handling of precipitates						Students (12.1-12.10)	
Unit IV	Empowerment of Local Workforce: Developing skills in pharmaceutical analysis at the local level empowers the workforce within the	Quality Control and Assurance: Skilled professionals in pharmaceutical analysis are crucial for establishing and maintaining quality control and assurance systems.	Research and Development: National research institutions and universities focusing on pharmaceutical sciences can benefit from expertise in	International Trade and Regulation Compliance: Global expertise in pharmaceutical	-	-	Method Selection and Optimization: The paragraph introduces different methods and techniques used in analytical	-	-	-	-	Safe and Inclusive Learning Environments (SDG	Equity and Inclusion in Higher Education (14.1-	Skill Development



	community.		pharmaceutic al analysis	analysis promot es internat ional trade and regulato ry compli ance			chemistry, providing individuals with a broad understandi ng of the available options for analysis.					4.a)	14.4 .2)	
Unit v	Contribution to Local Research and Innovation: Skilled professionals in pharmaceutical analysis at the local level can contribute to research and innovation initiatives within the community.	Regulatory Compliance: National regulatory authorities responsible for overseeing the pharmaceutical industry rely on professionals in pharmaceutical analysis to enforce regulatory standards and ensure compliance	Pharmacovigilance and Post-Marketing Surveillance: Skilled professionals in pharmaceutical analysis can contribute to national pharmacovigilance efforts.	International Trade and Regulation: Knowledge and skills in pharmaceutical analysis facilitate international trade in pharmaceutical products.	-	-	Data Interpretation: Analytical chemistry involves the interpretation of experimental data and drawing conclusions based on the results obtained.	-	-	-	-	Prof essio nal Dev elop ment of Teac hers (SD G 4.c)	Equi ty and Incl usio n in Hig her Edu catio n (14. 1- 14.4 .2)	Hands- on Experie nce



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/4th IR					



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



Unit II	--	--	--	<p>Promote harmonization of pharmaceutical practices, improve patient outcomes on a global scale, and advance the development and accessibility of medications worldwide.</p>	<p>Enhances employability in various sectors of the pharmaceutical industry, including manufacturing, quality control, research and development, regulatory affairs, education, and consultancy. It provides a competitive edge and opens up opportunities for career advancement and specialization in the global pharmaceutical landscape.</p>	--	--	--	--	--	--	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Focus on Employability Skills (Local/Regional and Global)
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Unit III	--	--	--	This knowledge facilitates the selection of appropriate excipients, manufacturing processes, and quality control measures to meet regulatory requirements and deliver safe and efficacious pharmaceutical products to patients.	Various sectors of the pharmaceutical industry, including formulation development, quality control, manufacturing, regulatory affairs, research and development and pharmacy practice.	--	--	--	--	--	--	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Focus on Employability Skills (Local/Regional and Global)
Unit IV	--	--	--	Helps in optimizing drug delivery, formulation stability, patient compliance, and ensuring the safety and efficacy	Various sectors of the pharmaceutical industry, including formulation and development, quality control, regulatory	--	--	--	--	--	--	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Focus on Employability Skills (Local/Regional and Global)



				of pharmaceutical products	affairs, research and development, clinical practice, and pharmaceutical 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, manufacturing, dermatology, cosmetics, academia, and research institutions within the pharmaceutical industry.	--	--	--	--	--	--	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Focus on Employability Skills (Local/Regional and Global)



BP104T	Unit Relevance to the local, national, regional and global developmental needs								
Local									
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 th IR								



Unit I	-	-	Impurities in pharmaceutical substances: History of Pharmacopoeia, Sources and types of impurities	Impurities in pharmaceutical substances: History of Pharmacopoeia, Sources and types of impurities	Determination of impurities In pharmacopoeial substance generate employment.	-	Determination of impurities In pharmacopoeial substance. Which develop skills	-	-	-	-	Skill for decent work SDG 4.4.	Professional Education (17.1-17.5)	It helps in developing technical skills that industry requires. And thus helps in creating employment.
Unit II	-	-	Acids, Bases and Buffers 2. Major extra and intracellular electrolytes 3. Dental products	Acids, Bases and Buffers 2. Major extra and intracellular electrolytes 3. Dental products	Production of acid base, Electrolyte solution, identifies the globe provides a lot of employment.	Production of acid base, Electrolyte solution, identifies the globe provides a lot of employment.	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development It helps in developing technical skills that industry requires. And thus helps in creating



					oyment.										employ ment
Unit III	-	-	Synthesis, reactions and medicinal uses of following compounds/derivatives Gastric acidifiers, antacid and cathartics	Synthesis, reactions and medicinal uses of following compounds/derivatives Gastric acidifiers, antacid and cathartics	Synthesis, reactions and medicinal uses of following compounds/derivatives Gastric acidifiers, antacid and cathartics	-	Synthesis of HCl, Magnesium sulphate, Sodium hydrogen carbonate, combined antacid preparation helps in honing the technical skill and expertise in production	-		-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development It helps in developing technical skills that industry requires .And thus helps in creating employment	



Unit IV	-	-	Synthesis, reactions and medicinal uses of following compounds/derivatives Expectrorants, emetics, antidotes, Haemitinics	Synthes is, reaction s and medicin al uses of followi ng compou nds/deri vatives Expectr orants, emetics, antidote s, Haemiti nics	Synth esis, reacti ons and medic inal uses of follo wing comp ounds /deriv atives Expe ctrora nts, emeti cs, antid otes, Haem itinics globe provi des a lot of empl oyment.	-	Synthesis of Haemitinics, Anti dotes, expectorant s preparation helps in honing the technical skill and expertise in production	-		-	-	Skill s for Dec ent Work (SD G 4.4)	Prof essional Edu cation (17.1-17.5)	Skill Develop ment It helps in developi ng technica l skills that industry requires and thus helps in creating employ ment
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Unit v	-	-	Radiopharmaceuticals	Radiopharmaceuticals Products	Radiopharmaceuticals	-	-	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development It helps in developing technical skills that industry requires and thus helps in creating employment
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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/4th IR
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BP-105T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I & II				Awareness students about communication skill ,barrier in communications and styles			Knowledge of different communication styles , barrier, elements (face to face ,verbal ,non verbal communication will help in communicating to the world					Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development



Unit III	-	-	-	Globaly 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	-	-	-	-	Skil ls 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	-	-	-	Globaly 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 discussion			interview rounds					n (23.1 - 23.13)	al and Global)	
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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 th IR
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
BP106 RBT														



Unit I				Student will be able to understand importance of the living world on a global scale allows for informed decision-making and actions aimed at promoting the coexistence of humans and nature while preserving the planet's ecological integrity.			Remedial Biology Remedial Biology provides a strong foundation for various careers and areas related to health, fitness, and medical sciences. The knowledge gained can enhance critical thinking, problem-solving skills, and the ability to apply scientific principles to practical situations, contributing to skill development					(SD G 4.4)	(9.1 - 9.3)	Global Education Knowledge, Skill Development, Employability
Unit II		-		Student will be able to know Body fluids and circulation, as well as digestion and absorption, have broad implications for global water resources, nutrient cycling, agricultural practices, food security, and waste management. By understanding and managing these processes sustainably, we can contribute to a more								(SD G 4.4)	(9.1 - 9.3)	Global Education Knowledge, Skill Development, Employability



				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 Knowledge, Skill Development, Employability
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 Knowledge, Skill Development, Employability
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 Knowledge, Skill Development

Unit	Relevance to the local, national, regional and global developmental needs			K.R. MANGALAM	UNIVERSITY	Relevance To Employment/ Entrepreneurship/ Skill Development	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability	SDG	NEP	POE/4 th IR		ent, Employability
				sustainable future.								



BP107P	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	-	-	-	-	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 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 10-12	-	-	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	-	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



							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 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	-	-	-	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	-	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



							they will be able to correlate the knowledge and information gathered in their day-to-day life and future job prospective also							
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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/4th IR
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BP1 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 impurity in API by limit test	-	-	Analysis of impurities helps in quality control of Drugs	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9),	Skill Development, Employability
Unit II	-	-	To Perform the standardization of different solutions for further synthesis use and analysis	To determine the concentration of solution	-	-	Standardization of solution will help in assay of Drugs	-	-	-	-	Skills for Decent Work (SDG	Promoting High-quality research	Skill Development, Employability



												4.4)	h (18. 1- 18. 9),	
Unit III	-	-	To Perform Quality control of marketed formulations	To analyse the import sample by following different assay methods	-	-	Assay of Drugs helps in Quality control of Drugs					Skills for Decent Work (SDG 4.4)	Tec h n i c a l S k i l s t h a t m a t c h I n d u s t r y N e e d s	Skill D e v e l o p m e n t, E m p l o y a b i l i t y
Unit IV	-	-	To determine the normality of drugs during quality check of product	To determine the concentration of solution	-	-	Standardization of solution will help in assay of Drugs				-	Skills for Decent Work (SDG 4.4)	Tec h n i c a l S k i l s t h a t m a t c h I n d u s t r y N e e d s	H a n d - o n E x p e r i e n c e



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 th IR		
BP 109P	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	-	-	-	-	-	Skills for Decent Work (SDG	Promoting High-quality research (18.	Focus on Employability Skills (Local/ Regional and Global)



						solutions, catering to specific patient needs and establishing their own successful ventures.						4.4)	1-18.9)	
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.	-	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 needs and create innovative solutions, establishing successful ventures in the pharmaceutical industry.-	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Focus on Employability Skills (Local/Regional and Global)
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	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Focus on Employability Skills (Local/Regional and Global)



						products.								
Unit IV	-	-	-	Powders and granules, suppositories, 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.	-	Powders and granules, 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.	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Focus on Employability Skills (Local/Regional 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	-	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Focus on Employability Skills (Local/Regional 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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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/4th IR
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BP 110P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	& Environment			
Unit I	-	-	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 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	Employability



											i m p u r i t y			
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	-	-	-	-	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



			Neutralizing capacity of aluminum hydroxide gel	Neutralizing capacity of aluminum hydroxide gel										
Unit IV			Preparation of inorganic pharmaceuticals Boric acid Potash alum	Preparation of inorganic pharmaceuticals Boric acid Potash alum								Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9), Practical Courses from Industry/Alumni	Skill Development, Employability



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/4th IR



BP111 P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	This course is designed to give basic communication skills with a focus on local relevance and developmental needs.	This course is designed to give basic communication skills with a focus on regional relevance and developmental needs.	This course is designed to give basic communication skills with a focus on national relevance and developmental needs.	This course is designed to give basic communication skills with a focus on global relevance and developmental needs.	meant to teach effective communication skills, which are essential for employment.	meant to teach effective communication skills, which are essential for Entrepreneurship	Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail	yes	-	-	-	1.a Ensure significant mobilization of resources from a variety of sources..	-	Technical Skills that match Industry & consultancy Needs/Soft Skills/Skill Development



							Etiquette Presentation Skills,							
Unit II	This course is designed to teach Pronunciation, a fundamental communication skill with local relevance and developmental requirements.	This course is designed to teach Pronunciation, a fundamental communication skill with regional relevance and developmental requirements.	This course is designed to teach Pronunciation, a fundamental communication skill with national relevance and developmental requirements.	This course is designed to teach Pronunciation, a fundamental communication skill with global relevance and developmental requirements.	meant to teach effective communication skills, which are essential for employment.	meant to teach effective communication skills, which are essential for Entrepreneurship	Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills,	yes	-	-	-	1.a Ensure significant mobilization of resources from a variety of sources..	-	Technical Skills that match Industry & consultancy Needs/S oft Skills/S kill Development



Unit III	This course is designed to teach Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills, which are fundamental communication skills with local relevance and development requirements.	This course is designed to teach Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills, which are fundamental communication skills with regional relevance and development requirements.	This course is designed to teach Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills, which are fundamental communication skills with national relevance and development requirements.	This course is designed to teach Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills, which are fundamental communication skills with global relevance and development requirements.	meant to teach effective communication skills, which are essential for employment.	meant to teach effective communication skills, which are essential for Entrepreneurship	Effective Communication /Writing Skills /Effective Writing /Interview Handling Skills /E-Mail Etiquette Presentation Skills,	yes	-	-	-	1.a Ensure significant mobilization of resources from a variety of sources..	-	Technical Skills that match Industry & consultancy Needs/Soft Skills/Skill Development
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Unit IV												1.a Ensu re signi fican t mob ilizat ion of reso urce s from a varie ty of sour ces.. .	-	Technic al Skills that match Industry &osulta ncy Needs/S oft Skills/S kill Develop ment
Unit v												1.a Ensu re signi fican t mob ilizat ion of reso urce s	-	Technic al Skills that match Industry &osulta ncy Needs/S oft Skills/S kill Develop



														from a variety of sources..		ment
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Unit	Relevance to the local, national, regional and global developmental needs	Relevance To the Employability/ Entrepreneurship/ Development Skill	Relevance to the Professional Gender, Human Environment Sustainability Ethics, Values, &	SD G	NE P	POE/4 th IR
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BP11 2RBT	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
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 experiments and techniques contribute to our knowledge of biology, have practical applications in healthcare and forensic investigations, and play a role in global		Remedial Biology provides a foundational understanding of the human body, including its structures and function for both gender			(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability



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 understanding of living organisms.					(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability
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 Education Knowledge, Skill Development, Employability
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 Education Knowledge, Skill Development, Employability

Unit	Relevance to the local, national, regional and global developmental needs	 MANGALAM UNIVERSITY	Relevance To the Employability/ Entrepreneurship/ Skill Development	Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability	SDG	NEP	POE/4 th IR
			advancing our knowledge of human populations globally.				
Unit v			The determination of tidal volume is valuable in assessing respiratory health, guiding mechanical ventilation, understanding exercise physiology, monitoring occupational and environmental exposures, and enhancing sports performance. These applications have global relevance in healthcare, occupational safety, environmental protection, and sports medicine.				(SD G 4.4) (9.1-9.3) Global Education Knowledge, Skill Development, Employability

Semester-II



BP201T	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	-	-	-	-	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 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 (9.1-9.3)	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 (9.1-9.3)	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	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



K.R. MANGALAM UNIVERSITY



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 th IR
BP2 02T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	To know standard IUPAC nomenclature of	-	-	Knowledge of nomenclature will help in naming unknown compounds	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development



				compounds											
Unit II		-	-	Fulfils understanding of basic Elimination, substitution reaction for further synthesis			Knowledge of basic Elimination, substitution reactions will help in synthesis of new unknown compounds	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development	
Unit III	-	-	-	Globally aware about syntheses 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 Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Skill Development	



Unit IV	-	-	-	Global awareness about synthesis of carbonyl compound and their determination	-		Study of carbonyl compound will help in synthesis of drugs containing carbonyl group and their derivatives.	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Skill Development
Unit v	-	-	-	Global awareness about synthesis of carboxylic compound and their determination	-		Study of carboxylic compound will help in synthesis of drugs containing carboxylic group and their derivatives.	-	-	-	Professional Education (17.1 - 17.5)	Promoting High-quality research (18.1-18.9)	Skill Development



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 th 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 molecu les in physiolo gical and patholog ical conditio ns.	-	-	helps students to get familiar with real-world problems so that they can brainstorm new ideas to address them	-	-	-	-	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 potential Energy rich compounds (SDG 7)		
Unit II	-	-	-	Carbohydrate metabolic pathways knowledge help to develop antidiabetic drug discovery and development	-	-	This basic knowledge helps, students would find themselves 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)	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs; Skill Development
Unit III	Help to know about balance diet and importance	-	-	-	-	-	biochemists 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	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs; Skill Development



							atherosclerosis, heart diseases					well-being for all at all ages (SDG 3)		
Unit IV	-	-	-	Understanding the structure and function of DNA has revolutionised the study of disease pathways, evaluation of a person's genetic predisposition to particular diseases, diagnosis of genetic abnormalities, and	-	-	Purine metabolic pathways knowledge help to develop gout drug discovery and development	-	-	-	-	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)"	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs; Skill Development



				development of new medications.										
Unit v	-	-	-	Help in drug discovery & development by inhibiting enzymes	-	-	Enzymes knowledge helps us in drug designing	-	-	-	-	Skills for Decent Work (SDG 4.4) (practical training in lab)	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs; Skill Development

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/4th IR
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BP2 04T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
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	Promoting High-quality research (18.1-18.9) Professional education (17.1-	Global education knowledge



														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	Professional education (17.1-17.5)	Global education knowledge	
Unit III	-	-	-	The focus in understanding the pathophysiology of diseases of haematological, endocrine, nervous and gastrointestinal system	-	-	In gaining basic knowledge on pathophysiological mechanism of diseases of haematological, endocrine, nervous and gastrointestinal system	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Professional education (17.1-17.5)	Global education knowledge	
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	Professional education (17.1-17.5)	Global education knowledge	



Unit v	-	-	-	To emphasize the pathophysiology of infectious diseases as well as sexually transmitted diseases.	-	-	In gaining basic knowledge of pathophysiological mechanism of infectious diseases as well as sexually transmitted diseases.	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Professional education (17.1-17.5)	Global education knowledge
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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/4th IR
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BP2 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	Environmental Protection: Local environmental and sustainability initiatives focus on protecting and preserving local ecosystems, natural resources, and biodiversity. T	Regional Environmental Conservation: Regional initiatives focused on environmental and sustainability practices contribute to the conservation of regional ecosystems, natural resources, and biodiversity.	Environmental Protection: National-level environmental and sustainability initiatives focus on protecting and preserving the country's ecosystems, natural resources, and biodiversity.	Technological Competence: The paragraph introduces concepts and technologies related to computer systems, web development,	-	-	Technical Skills: Studying number systems, web technologies, databases, and bioinformatics allows individuals to develop technical skills related to these areas. They can learn programmi	-	-	-	Conservation of Natural Resources: Environmental and sustainability practices emphasize the responsible use and conservation of	Skills for Decent Work (SDG 4.4)	Online and Digital Education: Ensuring Equitable Use of Technology (24.1-24.5	Employability



				databases, and bioinformatics. By acquiring skills in these areas, individuals can enhance their technological competence, which is increasingly important in a globally connected world.			ng languages, gain proficiency in using web development tools, understand database management systems, and acquire knowledge of bioinformatics tools and databases.				natural resources such as water, forests, minerals, and energy sources .)	
Unit II	Community Health and Well-being: Environmental and sustainability practices have a direct impact on	Transboundary Cooperation: Environmental and sustainability challenges often transcend political boundaries	Economic Opportunities : Embracing environmental and sustainability practices can create economic	Developing skills in web technologies, databases, and bioinfor	-	-	Problem-Solving Skills: Learning about information systems, software developme	-	-	-	Mitigation of Climate Change: Environmental and	Sustainable Development and Global	Standard - setting and Accreditation	Coding



	community health and well-being. By reducing pollution and promoting clean and sustainable practices, local initiatives can improve air and water quality, reduce exposure to harmful substances, and create healthier living environments.		opportunities at the national level. Investing in renewable energy projects, such as solar and wind power, can lead to the development of domestic green industries, job creation, and reduced dependency on fossil fuels.	matics allows individuals to collaborate and communicate effectively with professionals from different countries and cultural backgrounds.			nt, and data analysis fosters problem-solving skills.				sustainability efforts play a crucial role in mitigating climate change and reducing greenhouse gas emissions.	Citizenship (SDG 4.7)	for School Education (8.1-8.11)	
Unit III	Local Economic Opportunities: Embracing environmental and sustainability practices can create local	Sustainable Resource Management: Regions often share common resources, such as water basins, forests, and fisheries.	Climate Change Adaptation and Resilience: National-level environmental and sustainability initiatives are	Developing skills in data management and analysis prepares individuals	-	-	Analytical Thinking: The topics mentioned in the paragraph require analytical thinking and data analysis.	-	-	-	Biodiversity Preservation: Environmental and sustainability initiatives	Promote peaceful and inclusive societies for susta	Transforming the Regulatory System (20.	Skill Embedded Courses Development



	<p>economic opportunities. For example, investing in renewable energy projects can lead to the development of green jobs and the growth of clean energy industries in the local area.</p>		<p>crucial for adapting to the impacts of climate change and building resilience.</p>	<p>tools to handle large volumes of data, extract meaningful insights, and make informed decisions.</p>			<p>Whether it's converting number systems, analyzing data in databases, or performing bioinformatics analysis, individuals develop analytical thinking skills.</p>				<p>focus on preserving biodiversity and protecting ecosystems</p>	<p>inable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (SDG 16)</p>	<p>1-20.15)</p>	
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Unit IV	Resilience to Climate Change: Local communities that prioritize environmental and sustainability measures are better equipped to adapt to the impacts of climate change. This includes implementing climate change adaptation strategies, such as building resilient infrastructure, protecting coastal areas from sea-level rise, and implementing drought management plans.	Regional Economic Development: Environmental and sustainability practices can have a positive impact on regional economic development.	Policy and Regulatory Frameworks: National-level environmental and sustainability practices involve the development and implementation of policy and regulatory frameworks. Governments establish laws, regulations, and standards to promote sustainable practices across various sectors, such as energy, transportation, waste management, and agriculture.	Pharmaceutical Industry Advancements: The application of computers in pharmacy, such as drug information storage, pharmacokinetics, drug design, electronic prescribing systems, and barcode medicine identification, has a global impact on the	-	-	Collaboration and Communication: Many of the topics mentioned in the paragraph, such as web technologies and databases, involve collaborative work and effective communication.	-	-	-	Pollution Prevention and Environmental Health: Environmental and sustainability practices aim to prevent pollution, reduce environmental contamination, and promote environmental health	Ensure healthy lives and promote well-being for all at all ages (SDG 3)	Technology Use & Integration (23.1-23.13)	On-Campus /Online Jobs
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				pharmaceutical industry .										
Unit v	Community Engagement and Empowerment: Local environmental and sustainability initiatives often involve community engagement and empowerment.	Knowledge Sharing and Capacity Building: Regional environmental and sustainability initiatives provide opportunities for knowledge sharing and capacity building	Education and Awareness: National-level environmental and sustainability initiatives focus on education and awareness-raising campaigns. By promoting environmental literacy and awareness among citizens, governments can foster a culture of sustainability and responsible environmental stewardship.	Bioinformatics and Vaccine Discovery: The paragraph mentions the impact of bioinformatics in vaccine discovery. Bioinformatics plays a vital role in analyzing genomic data, identifying potential drug targets,	-	-	Research and Information Gathering: The paragraph includes topics related to drug information storage, pharmacokinetics, bioinformatics, and data analysis. Studying these areas develops skills in research and information gathering.	-	-	-	Pollution Prevention and Environmental Health: Environmental and sustainability practices aim to prevent pollution, reduce environmental contamination, and promote environmental health	1.3 Implementation nationally appropriate social protection systems and measures for all, including floors	Towards a More Holistic and Multidisciplinary Education (11.1-11.13)	Updated Curriculum



				and developing vaccines.										
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Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Skill			Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability				SDG	NEP	POE/4 th IR
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
BP2 06T														



Unit I	-	-	-	Awareness about different natural resources, i.e. renewable/non-renewable energy resources & etc	-	-	Familiar and identification and knowledge of different environmental resources and their components.	-	-	-	Reduction of threat on natural resources.	Ensure healthy lives and promote well-being for all at all ages (SDG 3) Ensure access to affordable, reliable, sustainable and modern energy for all (SDG 7) Promote sustained, inclusive and sustainable economic growth, full and productive employment and	Global Education Knowledge	Consulting Field Projects, Projects
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												decent work for all (SDG 8), Take urgent action to combat climate change and its impacts (SDG 13), Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and	
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													halt biodiversity loss (SDG 15)		
Unit II		-	-	knowledge of different ecological systems, their structure and functions	Best Commercial utilization of natural resources.								Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (SDG 15)	Promoting High-quality research (18.1-18.9)	Case Competitions



Unit III		-	-	Know about factors affecting components of environment & their adverse effect on individual health. Introduction of Public awareness programmes. Introduce and implementation of Laws & Acts there on.								Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (SDG 16) Revitalize the global partnership for sustainable development (Role of all Schools, KRMU)		Team Work, skill development, Case Competitions
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													(SDG 17)		
Unit	Relevance to the local, national, regional and global developmental needs				 K.R. MANGALAM UNIVERSITY			Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability			SDG	NEP	POE/4th IR		



BP207P	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 correlate 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 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 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 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		knowledge of the students in the field			all ages. SDG 4.4: Skills for 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	-	-	-	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							
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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/4th IR
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BP208 P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Fulfils the need for Drug Development 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 Development
Unit II		-	-	Fulfils the need for determination 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 Development
Unit III	-	-	-	Fulfils the need for Drug Development 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 Development, Employability



BP2 09P	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/4th IR		



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 intermediates.	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (SDG 4.b) Revitalize the global partnership for susta	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 High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program
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													inable development (SD G 17)		through Innovation 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 knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediates	-	-	-	-	Sustainable Development and Global Citizenship (SD G 4.7) Scholarships for Higher Education (SD G 4.b) Revitaliz	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 High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability Skills (Local/ Regional and Global) Internship		



												e the global partnership for sustainable development (SDG 17)		Programs Consulting Field Projects Entrepreneurship Program through Innovation System
Unit III				Chemical, drug, and intermediate preparation is a key part of the pharmaceutical sector globally.			A knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediates	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (9.1-9.3) Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9)	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 High-quality research (18.1-18.9)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability



											Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	Technology Use & Integration (23.1-23.13)	Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
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Sem-III

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/4th IR
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BP3 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				The knowledge of general methods of preparation and reactions of Benzene and its derivatives has global importance			A knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediates.	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (SDG 4.b) Revitalize 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 High-quality research	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability



											global partnership for sustainable development (SDG 17)	(18.1-18.9) Technology Use & Integration (23.1-23.13)	Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation 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 knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediat	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Schola	Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher Education	Global Education Knowledge Practical Courses from Industry /Alumni



						es					rships for Higher Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	System (9.1-9.3) Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	Technical Skills that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
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Unit III			<p>The global importance of studying fats and oils lies in their role in human nutrition, food industry development, agriculture, industrial applications, and environmental sustainability.</p>		<p>A knowledge able individual in organic chemistry aids in the synthesis of drugs and their intermediates</p>	-	-	-	-	<p>Sustainable Development and Global Citizenship (SDG 4.7)</p> <p>Scholarships for Higher Education (SDG 4.b)</p> <p>Revitalize the global partnership for sustainable development (SDG 17)</p>	<p>Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher Education System (9.1-9.3)</p> <p>Professional Education (17.1-17.5)</p> <p>Promoting High-quality research (18.1-18.9)</p> <p>Technology Use & Integration (23.1-23.13)</p>	<p>Global Education Knowledge</p> <p>Practical Courses from Industry /Alumni</p> <p>Technical Skills that match Industry Needs</p> <p>Focus on Employability Skills (Local/ Regional and Global)</p> <p>Internship Programs</p>
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													Consulting Field Project
													Entrepreneurship Program through Innovation 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 intermediates	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7)	Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher Education System (9.1-9.3)	Global Education Knowledge	Practical Courses from Industry /Alumni
										Scholarships for Higher Education (SDG 4.b)	Higher Education System (9.1-9.3)	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs
										Revitalize the	Promoting High-quality research	Focus on	Employ



											global partnership for sustainable development (SDG 17)	(18.1-18.9) Technology Use & Integration (23.1-23.13)	ability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
Unit V			The knowledge of general chemistry, methods of preparation and reactions of Cyclo alkanes has global importance.		A knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediat	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7)	Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher	Global Education Knowledge Practical Courses from Industry	



						es					Scholarships for Higher Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	Education System (9.1-9.3) Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	/Alumni Technical Skills that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
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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 th IR
BP 302T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Global Health care Needs. It will increase the solubility of poorly soluble			It will bring preformulation knowhow in the students	-	-	-	-	Ensure healthy lives and promote well-being	Professional Education (17.1-17.5)	Technical 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 properties.			the problems.					g for all at all ages (SD G 3)		
Unit IV		-	-	Global Health care Needs. It will increase the pharmacokinetics basis among the clinical trials of differed drugs among the students.			It will generate the technical knowhow among the students towards the animal and human studies.	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SD G 3)	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs
Unit v				Global Health care Needs. It will be highly helpful to			It will bring the skill among the students to work in the research & development labs.	-	-	-	-	Ensure healthy lives and promote well	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs



				students to prepare the differed medias and buffers used in the industry .									- being for all at all ages (SD G 3))	
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BP303T	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/4th IR			



Unit I	-	-	Its shown a remarkable opportunity to improve the standard of national pharmacy practice.	Antibiotic control programs growing globally, essential to effective and forward-looking for society.	-	-	Many tools to facilitate, microbiology learning objects or lab-related and data-driven exercises.	-	-	No	-	"Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge
Unit II	-	-	Imparts knowledge in various aspects of marketing and its applications.	Current and future generation globally requires and sterilization.	-	-	Apply to a wide variety of problems affecting the overall human condition.	-	-	-	-	"Make cities and human settlements inclusive,	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



													safe, resilient and sustainable (SDG 11)"		
Unit III		Aids in understanding the variety of microorganisms and fungus	Gives a fundamental understanding of the variety of creatures and forms of algae.	Develop the concepts of origin, continuity, complexity of molecular life activities, and cytological aspects of growth and development.	-	-	Recognise the significance of micro methods in plant anatomy.	-	-	-	-		"Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



Unit IV	Aids in learning about the biological, mechanical, and physical processes that maintain human health and well being.	Encourages physical and cognitive health	Offers national protection from food poisoning.	Provides protection against food poisoning globally.	-	-	Apply to a wide variety of problems affecting the overall human condition.	-	-	-	-	"Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge
Unit v	-	-	Improves Human Health and well being .	Environmental concerns, ecological preservation, sustainable living, and the defence of human rights.	-	-	Develops research aptitude	-	-	-	-	"Make cities and human	Promoting High-quality	Global Education Knowledge



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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 th 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 intermediates.	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education	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 Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry



											ion (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation 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 knowledgeable individual in organic chemistry aids in the synthesis of drugs and their intermediates	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships	Quality Universities and Colleges: A New and Forward-looking Vision for India's Higher Education System (9.1-	Global Education Knowledge Practical Courses from Industry /Alumni Technic



											for Higher Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	9.3) Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	al Skills that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
Unit III			Chemical, drug, and intermediate preparation is a key part of the pharmaceutical sector globally.			A knowledgeable individual in organic chemistry aids in the synthesis of	-	-	-	-	Sustainable Development and Global Citizenship	Quality Universities and Colleges: A New and Forward-looking Vision for	Global Education Knowledge Practical Courses



						drugs and their intermediates					(SDG 4.7) Scholarships for Higher Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	India's Higher Education System (9.1-9.3) Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
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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 th IR	
	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability				
BP 306P															
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	--	--	(SD G4.1)	(18.1-18.9)	Focus on Employability Skills (Local/ Regional 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional and Global)



Unit IV	--	--	--	Contribute globally to the field of stability constant determination and donor-acceptor ratio calculation of PABA-Caffeine and Cupric-Glycine complexes by conducting research, developing standardized solubility and pH titration methods, and sharing findings to enhance global understanding, promote accurate characterization of complex formation, and facilitate collaboration among scientists worldwide.	-	--	By providing training programmes, workshops, and hands-on sessions that concentrate on the solubility method and pH titration method, you can help researchers and scientists develop their skills and advance in their field while also making a contribution to the field of stability constant determination and donor-acceptor ratio calculation of PABA-Caffeine and Cupric-Glycine complexes.	--	No	--	--	(SD G4.1)	(18.1-18.9)	Focus on Employability Skills (Local/Regional 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.	-	--	--	--	No	--	--	(SD G4.1)	(18.1-18.9)	Focus on Employability Skills (Local/Regional 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/4th IR
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BP 307P	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.	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7)	Promoting High-quality research (18.1-18.9)	Global Education Knowledge
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.	-	-	-		Sustainable Dev	Promoting High-	Global Education Knowledge



			applications.										elopment and Global Citizenship (SDG 4.7)	quality research (18.1-18.9)	
Unit III		Aids in understanding the variety of microorganisms and fungus	Gives a fundamental understanding of the variety of creatures and forms of algae.	Develop the concepts of origin, continuity, complexity of molecular life activities, and cytological aspects of growth and development.	-	-	Recognise the significance of micro methods in plant anatomy	-	-	-	-				
Unit IV	Helps students gain knowledge of the biological, mechanical	Encourages physical and cognitive health	Provides nationwide protection from foodborne illness.	Provides protection against food poisoning globally.									Sustainable Development and Global Citizenship (SDG	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



	cal, and physical systems that keep people healthy and happy.												4.7)		
Unit v	-	-	Improves Human Health and well being .	Human rights protection, ecological preservation, environmental issues, and sustainable life.	-	-	Develops research aptitude	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7)	Promoting High-quality research (18.1-18.9)	Global Education Knowledge	



Unit	Relevance to the local, 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 th IR
	Local	Regional	National	Global		Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values			
BP 308P														
Unit 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	--	--	SDG 6)	(18.1-18.9)	Focus on Employability Skills (Local/ Regional 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 Employability Skills (Local/



																		Regiona 1 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 Employability Skills (Local/Regional 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 th IR	
BP4 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Nomenclature of optical isomers and separation is used	Synthesis and separation of optical	-	There are four methods to separation of isomers. Which develop skills	Usage of any medicine especially is based on appropriate	-	-	-	Skill for decent work SDG 4.4.	Professional Education (17.1-17.5)	It helps in developing technical skills that industry requires



				globally	iso mer gen erat e emp loy men t.			professin onal ehics.)	.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.	Produ cti on of Geometr ic isomers 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	-	-	-	Synthesis, reactions and medicinal uses of following compounds/derivatives Pyrrole, Furan, and Thiophene Relative aromaticity and reactivity of Pyrrole, Furan and Thiophene	Synthesis of drugs containing Pyrrole, furan and Thiophene Relative provides a lot of employment.	-	Synthesis of furan thiophene and Pyrrole, helps in honing the technical skill and expertise in production	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development
Unit IV	-	-	-	Pyrazole, Imidazole, Oxazole and Thiazol	Synthesis of drugs containing	-	Synthesis of furan Quinoline Isoquinoline, acridine helps in honing the	-	-	-	-	Skills for Decent Work (SD	Professional Education (17.	Skill Development



				e. Pyridine, Quinoline, Isoquinoline, Acridine and Indole	ng Pyridin, Quinoline Isoquinoline acridine globe provides a lot of employment.		technical skill and expertise in production					G 4.4)	1-17.5)	
Unit v	-	-	-	Fulfils the need for Reactions of synthetic importance globally docking techniques .	Oppenauer-oxidation and Dakin reaction. Beckmanns rearr	-	Docking techniques helps in acing technical skill, Oppenauer-oxidation and Dakin reaction. Beckmanns rearrangement and Schmidt rearrangem	-.	-	-		Skills for Decent Work (SD G 4.4)	Professional Education (17.1-17.5)	Skill Development



					rang eme nt and Sch midt rear rang eme nt. Clai sen- Sch midt con dens atio n of emp loy men t.		ent. Claisen- Schmidt condensatio n								
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BP402 T	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 th IR
Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values Environment & Sustainability				



Unit I	-	-	-	Fulfils the need for Drug Development 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 Development
Unit II		-	-	Fulfils the need for Development of Drug acting on ANS (Sympathetic) globally	-	-	Study of SAR and synthesis of drugs acting on Sympathetic nervous system helps in New drug synthesis and Drug development process	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development
Unit III		-	-	Fulfils the need for Development of Drug acting on ANS (parasympathetic) globally	-	-	Study of SAR and synthesis of drugs acting on Parasympathetic nervous system helps in New drug synthesis and Drug development process	-	-	-	-	Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development
Unit IV		-	-	Fulfils the need for Development of Drugs acting on CNS	-	-	Understand the chemistry of drugs with respect to their pharmacological activity	-	-	-	-	Youth and Adult Literacy (SDG 4.6)	Adult Education and Lifelong Learning (21.1-21.10)	Skill Development



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

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/4th IR
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BP4 03T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Knowledge about physicochemical properties of 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	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs/Skill Development
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	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs/Skill Development



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



				and supports patient safety by providing reliable and stable medications.			ensuring product quality and patient safety.							
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Unit	Relevance to the local, national, regional and global developmental needs				Relevance To the Employability/ Entrepreneurship/ Development Skill			Relevance to the Professional Ethics, Gender, Human Values, Environment & Sustainability				SDG	NEP	POE/4 th IR
BP40 4T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development							



Unit I				Student will able to understand General Pharmacology special context Pharmacokinetics which will help to understand disease mechanism and drug action			Pharmacology as a discipline has significantly contributed to skill development in					(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability
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 pharmaco-economic 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 professionals to understand					(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability
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 Education Knowledge, Skill Development, Employability



				by leveraging their pharmacological properties.			care. Skill development in pharmacology continues through lifelong learning and interdisciplinary collaboration, enabling professionals to adapt to new developments and improve patient outcomes.							
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								(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability
Unit v				The global impact of drugs acting on the central nervous system is vast, addressing neurological and psychiatric disorders								(SD G 4.4)	(9.1-9.3)	Global Education Knowledge, Skill Development, Employability



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 th IR
BP4 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Introduction to Pharmacognosy & Phytochemistry			Skills related to Pharmacognosy & Phytochemistry fields would be developed			Better Quality of Herbal Drug		Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Global Education Knowledge Technical Skills that match Industry Needs, Skill Develop



										s				ment
Unit II	-	-	-	Knowle dge of cultivati on, collecti on, processi ng & storage of crude drugs			Skills related to production and storage of herbal drugs would be enhanced			B ett er yi el d		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 plant tissue culture			Skills related to production of plants through tissue culture technique would be enhanced.			E nv ir on m en t co ns er va tio n		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	-	-	-	Role of Pharma cognos			Skills related to principle			Tr ad iti		Skill s for Dec	Prof essi onal	Global Educati on



				y in allopathy and traditional systems of medicine			and practice of traditional medicines would be developed			onal knowledge		ent Work (SDG 4.4)	Educatio n (17.1-17.5)	Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment
Unit v				knowle dge of various categories of secondary metabol ites			Skills related to production and usage of secondary metabolites would be enhanced			N ewer drugs from natural resources		Skills for Decent Work (SDG 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	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 th 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 formulations	To analyse the import sample by following different assay methods	-	-	Assay of Drugs helps in Quality control of Drugs	-	-	-	-	Skills for Decent Work (SDG 4.4)	Practical Courses from Industry/Alumni	Skill Development, Employability
Unit III		-	To determine Physicochemical properties require in Research and development Department of Pharma Industries.		-	-	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 Development, Employability

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/4th IR
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BP407P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				<p>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.</p>	-	-	<p>Micromeritics assists in the development of professional skills by instructing professionals in particle characterization techniques, data interpretation, and particulate material optimisation. These</p>	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



						<p>skills allow individuals to participate in process optimisation, quality assurance, and product development</p> <p>Mastering these skills enables professionals to address complex formulation challenges and drive innovation in various industries.</p>								
Unit II	-	-	-	Through a greater understanding of flow behaviour and viscosity management, rheology makes a contribution to the world by enhancing the design and performance of many items and activities, including paints, cosmetics, food, and oil drilling. It provides effective production, quality control, and optimisation, which promotes improved		Rheology fosters expertise in measuring and interpreting flow behaviour, viscosity, and deformatio	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-	Global Education Knowledge	



				product development and global economic progress.			n properties of materials, enabling professionals in sectors like cosmetics, polymers, and pharmaceuticals to optimise formulations, solve problems, and invent with advanced materials, improving their career prospects and industry contributions.						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, emulsification, and particle size	-	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research	Global Education Knowledge



							reduction through coarse dispersion allows professionals to advance their knowledge of formulation creation and process optimisation. By mastering these abilities, people can develop a variety of industries and contribute to the productive production of high-quality goods.						(18.1-18.9)	
Unit IV		-	-	By facilitating the administration of poorly soluble medications and increasing their bioavailability and therapeutic potency, colloidal dispersions	-	-	Micromeritics assists in the development of	-	-	-	-	Skills for Decent Work	Promoting High Quality	Global Education Knowledge



				benefit society as a whole. Additionally, colloidal dispersions are used in a variety of industries, such as food, cosmetics, and electronics, which promotes global technical development and economic expansion.			professional skills by instructing professionals in particle characterization techniques, data interpretation, and particulate material optimization. A person's career prospects and industry contributions are improved by their ability to contribute to product development, quality assurance, and process optimization. They are used in industries					k (SD G 4.4)	quality research (18.1-18.9)	
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							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 professionals information and competence in stability testing procedures, degradation mechanisms, and formulation optimization, understanding medication stability aids in the development of professional skills. These talents help individuals to improve their capabilities	-	-	-	No	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



							and contributions to the industry by ensuring product quality, resolving stability problems, and making wise decisions in pharmaceutical research and development..								
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BP4 08P	Unit
Local	Relevance to the local, national, regional and global developmental needs
Regional	
National	
Global	
Employability	Relevance To the Employment/ 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/4th IR



Unit I				Pre-clinical studies are conducted worldwide, and trained the students			In experimental pharmacology, covers the basic concepts of animal laboratories animals commonly instruments used thus helps in Skill development	Skill development				Skills for Decent Work (SDG 4.4) Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development
Unit II		-	-	In this, pharmacology instruments are discussed with basic principle and working, enabled the students to fit for the			This unit based commonly instrument and their application on research and developments and this helps in skill development	Skill development					Professional Education (17.1-17.5)	Employability



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



				and other eye disorders are increasing to many folds, thus trained the students and make them available as skilled researchers			drugs available and their effect on rabbit eye							
Unit v				Globally, Skeletal Muscles disorders over the age, their pathogenesis, and challenges to			In skeletal muscle relaxants using rotarod apparatus experiment, students will learn the neuropharmacology and helps in skill developme					Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Employability



				overcome the disorders and development in the clinical and pre clinical studies			mt								
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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/4th IR
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BP4 09P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Globally it will in understanding the various modern analytical techniques to authenticate and quality control of crude drugs.	-	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Skill for decent work (SDG 4.4)	Professional education (17.1-17.5)	Global education knowledge



Unit II	-	-	-	-	-	Medicinal and aromatic plants is an approach of developing human resource and train the youth for.	To know the evaluation techniques for the herbal drugs	-	-	-	-	Quality primary/secondary education for all (SDG 4.1)	Professional education (17.1-17.5)	Technical skills that match Industry needs
Unit III	-	-	-	-	pharmacognosy help to test, define, and create novel medications for the treatment	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Skill for decent work (SDG 4.4)	Adult education and lifelong learning (21.1-21.10)	Global education knowledge



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Unit IV	-	-	-	Globally it will in understanding the various modern analytical techniques to authenticate and quality control of crude drugs.	-	-	to know the techniques in the cultivation and production of crude drugs	-	-	-	-	Quality primary/secondary education for all (SDG 4.1)	Equitable and Inclusive Education: Learning for all (6.1-6.20)	Technical skills that match Industry needs
Unit v	-	-	-	-	-	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Skill for decent work (SDG 4.4)	Adult education and lifelong learning (21.1-1-	Global education knowledge



													21.10)	
Unit VI	-	-	-		-	-	to understand the microscopic and morphological evaluation of crude drugs	-	-	-	-	Quality primary/secondary education for all (SDG 4.1)	Professional education (17.1-17.5)	Global education knowledge
Unit VII	-	-	-	Globally it will in understanding the various modern analytical techniques to authenticate and quality control of crude drugs.	-	-	To know the evaluation techniques for the herbal drugs	-	-	-	-	Skill for decent work (SDG 4.4)	Adult education and lifelong learning (21.1-21.10)	Global education knowledge



Unit VIII	-	-	-	Pharmacology is used by pharmaceutical companies to test, characterize, and develop new drugs for the treatment of human sicknesses..	-	-	to know the crude drugs, their uses and chemical nature	-	-	-	-	Quality primary/secondary education for all (SDG 4.1)	Equitable and Inclusive Education: Learning for all (6.1-6.20)	Global education knowledge
Unit IX	-	-	-	It will help people comprehend the many contemporary analytical approaches to authenti	-	-	to know the techniques in the cultivation and production of crude drugs	-	-	-	-	Skill for decent work (SDG 4.4)	Adult education and lifelong learning (21.1-21.10)	Technical skills that match Industry needs



				cate and control the quality of crude pharmaceuticals on a global scale.										
Unit X	-	-	-	Globally it will in understanding the various modern analytical techniques to authenticate and quality control of crude drugs.	-	-	to understand the microscopic and morphological evaluation of crude drugs	-	-	-	-	Quality primary/secondary education for all (SDG 4.1)	Equitable and Inclusive Education: Learning for all (6.1-6.20)	Technical skills that match Industry needs

Sem-V



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 th IR
BP5 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Antihistaminic agents and anti-cancer agents are used globally to tackle the menace	The production of these drugs is 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 professional ethics.	The safety of drugs are us	-	-	These types of drugs ensure healthy lives and pro	-	The production and quality control of these drugs helps in developing a lot of technical skills



				of cancer , allergies ,cold cough etc.	lot of employment .				ed for every type of gender .			motes well being of peoples across all ages .SD G3		and generating a lot employment across the globe.
Unit II	-	-	-	Anti-anginal and anti-hypertensive drugs are used globally to tackle the attack of angina and blood pressure.	The production of these drugs can generate a lot of employment .	-	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 professional ethics .	These types of drugs are used for every type of gender .	-	-	These types of drugs ensure healthy lives and promote well being of peoples across all ages	-	The production and quality control of these drugs helps in developing a lot of technical skills and generating a lot employment across the globe.



									nder			.SD G3		
Unit III	-	-	-	Anti-arrhythmic and anti-hyperlipidemic drugs used globally to treat the arrhythmia and high cholesterol disorders .	The production of these drugs can generate a lot of employment .	-	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 professional ethics .	These types of drugs are used for every type of gender	-	-	These types of drugs ensure healthy lives and promote well being of peoples across all ages .SD G3	-	The production and quality control of these drugs helps in developing a lot of technical skills and generating a lot employment across the globe.
Unit IV	-	-	-	Steroid and thyroid drugs are used globally	The production of these	-	The production and quality control of these drugs helps in	Usage and quality control of these drugs	These types of drugs	-	-	These types of drugs	-	The production and quality control of these



				as contraceptives, as anti-inflammatory agents and also used to cure thyroid cancer.	These drugs can generate a lot of employment.		developing and honing technical skills.	requires a lot of professional ethics.	of drugs are used for every type of gender.			ensure healthy lives and promote well being of peoples across all ages.	SDG3	drugs helps in developing a lot of technical skills and generating a lot employment across the globe.
Unit v	-	-	-	Anti-diabetic and local anaesthetics drugs are used globally to treat diabetes which is called as a silent killer. Local	The production of these drugs can generate a lot of employment.	-	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 professional ethics.	These types of drugs are used for every	-	-	These types of drugs ensure healthy lives and promote well being	-	The production and quality control of these drugs helps in developing a lot of technical skills and generating a lot employment



				anaesthetics are used to provide anaesthesia .	men t .				er y ty pe of ge nd er			g of peop lesac ross all ages .SD G3		ment across the globe.
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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/4th IR
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BP502T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	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,			-	-	-	-	"Ensure healthy lives and promote well-being for all at all ages (SDG 3)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge



					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.	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.	Tables can support entrepreneurship by aiding in business planning, financial analysis, and data organization, empowering entrepreneurs to make informed decisions, communicate their ideas, and drive the growth of their ventures.		-	-	N O	-	"Ensure healthy lives and promote well-being for all at all ages (SDG 3)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge	



Unit III	-	-	-	Liquid orals contribute globally by providing a more accessible and user-friendly medication option, especially for vulnerable populations like children and the elderly. Their ease of administration and accurate dosing improve patient compliance, leading to better health outcomes worldwide.		Liquid orals contribute to entrepreneurship by offering opportunities for formulation development, product innovation, and niche market creation, allowing entrepreneurs to tap into the growing demand for liquid medications and establish their own pharmaceutical ventures.		-	-	No	-	"Ensure healthy lives and promote well-being for all at all ages (SDG 3)"	Promoting High-quality research (18.1-18.9)	Global Education Knowledge
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Unit IV				<p>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.</p>	<p>Capsules contribute to employability by creating job opportunities in pharmaceutical manufacturing, formulation development, quality control, and regulatory affairs, requiring specialized skills and expertise. The widespread use of capsules also increases demand for professionals in sales, marketing, and distribution, further enhancing employability in the pharmaceutical industry.</p>	-	-	-	-	No	-	"Ensure healthy lives and promote well-being for all at all ages (SDG 3)"	<p>Promoting High-quality research (18.1-18.9)</p>	<p>Global Education Knowledge</p>
Unit v	-	-	-	<p>They play a critical role in emergency care, disease treatment, and patient management, thereby improving healthcare outcomes on a global scale.</p>	<p>The specialized knowledge and expertise required in parenteral preparation offer diverse career prospects in pharmaceutical manufacturing, clinical research, and healthcare</p>	-	-	-	-	No	-	"Ensure healthy lives and promote well-being	<p>Promoting High-quality research (18.1-</p>	<p>Global Education Knowledge</p>



					settings, enhancing employability in the pharmaceutical industry.								g for all at all ages (SD G 3)	18.9)	
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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/4th IR
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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	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge



Unit III		-	-	Studies related to autocooids and related drugs plays an important role in creating awareness on mechanism and pharmacological action of these drugs			Understanding basics of drug related to autocooids and related drugs	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for Decent Work SDG 4.4	Professi onal educatio n(17 .1- 17.5)	Global educatio n knowled ge
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	Professi onal educatio 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	Professi onal educatio n(17 .1- 17.5)	Global educatio n knowled ge



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 th IR
BP5 04T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Knowledge of Formation of Secondary metabolites			Skills enhanced with respect to production of secondary metabolites			Medicinal Value		Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Global Education Knowledge Technical Skills that match Industry Needs, Skill Develop



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Unit II	-	-	-	Knowle dge of Medici nal importa nce of Second ary metabol ites			Skills enhanced with respect to usage of secondary metabolites			M ed ici na l V al ue		Skill s for Dec ent Work (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 Isolation, Identifi cation and analysis of phytoco nstituen ts			Skills enhanced with respect to usage of phytoconstituents			M ed ici na l V al ue		Skill s for Dec ent Work (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 ed ici		Skill s for Dec	Prof essi onal	Global Educati on	



				al product ion of Phytoco nstituen ts			respect to Industrial production of secondary metabolites			na l I m po rta nc e		ent Wor k (SD G 4.4)	Edu catio n (17. 1- 17.5)	Knowle dge Technic al Skills that match Industry Needs, Skill Develop ment
Unit v				knowle dge of modern method of extracti on & analysis of Phytoco nstituen ts			Skills enhanced with respect to Extraction 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	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 th 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 integration of pharmaceutical jurisprudence and professional ethics enhances employability by equippin	--	--	----	(SDG 1.2, 4.4)	Professional Education (17.1-17.5), Transformation	Employability, Global Education Knowledge, Technical Skills that match Industry



			standards of medical treatment.		industry. Understanding the legal frameworks, compliance requirements, and ethical considerations within the field positions individuals for success in roles that require adherence to regulations, protection of intellectual property, and ethical decision-making.			g individuals with the knowledge, skills, and values necessary to make ethical decisions, comply with regulations, and prioritize patient welfare. Employers seek professionals who can navigate the complex ethical landscape of the pharmaceutical industry, building trust, and					g the Regulatory System (20.1-20.15)	Needs	
Unit II		-	Packaging and labelling directly impact sales and profits as they offer detailed information on the price, quality, quantity, usage, ingredients, and features of the products. They also display the brand logo and message that help the customer find the product easily by creating a recall value.												
Unit III		-	An Act to regulate the profession of pharmacy. Whereas it is expedient to make better provision for the regulation of the profession and practice of pharmacy and for that purpose to constitute Pharmacy Councils".												
Unit IV		-	The global impact of these acts and regulations lies in promoting public health, ensuring the												



			<p>safety and efficacy of pharmaceutical products, protecting animal welfare, and enhancing access to essential medicines. 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.</p>					maintaining high standards of professionalism.						
Unit v			<p>The global impact of these legislations is significant. They ensure the safety, quality, and accessibility of pharmaceutical products, promote ethical practices, protect patient rights, influence healthcare policies, and stimulate research and</p>											



			development in the pharmaceutical sector. These legislations contribute to improved healthcare outcomes, innovation, and the overall well-being of individuals globally.											
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Unit	Relevance to the local, national, regional and global development needs			Relevance To the Employability/ Entrepreneurship/ Skill Development	SDG	NEP	POE/4 th IR					
	Local	Regional	National									
BP5 06P			Global	Employability								
Unit-I: 1. Prefo	-	-	-	Preformulation studies offer a valuable opportunity for skill development in the pharmaceutical industry,	-	-	-	-	-	SDG 3: Good Health and Well-being: Parenteral formulations, such as injections and infusions,	Promoting High-quality	Skill Emb



<p>formulation studies on paracetamol/aspirin /or any other drug</p>			<p>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.</p>	<p>enhancing knowledge and expertise in the characterization and analysis of drug substances, formulation development, and optimization techniques. By actively engaging individuals in preformulation studies, individuals can acquire practical skills that are highly relevant for a successful career in pharmaceutical research and development.</p>						<p>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.</p>	<p>research (18.1-18.9) [Rheology being a important component in formulation development leads to conduction of research work]</p>	<p>edded Courses Development</p>
<p>Unit II: 1. Preparation and evaluation of Paracetamol</p>	-	-	<p>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.</p>	<p>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.</p>	<p>Tables can support entrepreneurship by aiding in business planning, financial analysis, and data organization, empowering entrepreneurs to make informed decisions, communicate their ideas, and drive</p>	-	-	-	-	<p>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.</p>	<p>Promoting High-quality research (18.1-18.9) [Rheology being a important component in</p>	<p>Skill Embedded Courses Development</p>



ts 2. Preparation and evaluation of Aspirin tablets 3. Coating of tablets- film coating of tablets/granules 4. Quality control test of (as per IP)						the growth of their ventures.							formulation development leads to conduction of research work]	nt
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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 th IR
BP5 07P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
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	Professional education (17.1-17.5)	Global education knowledge



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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge



				methods)	
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BP5 08P	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/4th IR	
	Local				Regional				National				Global				Employability			
	Local				Regional				National				Global				Employability			
	Local				Regional				National				Global				Employability			
	Local				Regional				National				Global				Employability			
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	Local				Regional				National				Global				Employability			
Local				Regional				National				Global				Employability				



Unit I	-	-	-	Identification & extraction of crude drugs			Skills enhanced with respect to extraction of secondary metabolites			Medicinal value		Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs, Skill Development
Unit II	-	-	-	Isolation & Identification of phytoconstituents			Skills enhanced with respect to isolation of secondary metabolites			Medicinal value		Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry



														Needs, Skill Development
Unit III	-	-	-	Chromatographic evaluation of crude drugs			Skills enhanced with respect to chromatographic analysis of crude drugs			Medicinal value		Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs, Skill Development

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 th IR
BP6 01T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	-	Antibiotics are used globally to treat lethal infections.	Production of antibiotics across the globe	-	Antibiotics developed synthetically, helps in honing the technical skill and expertise in production.	Usage of any medicine especially antibiotics is based on appropriate professional	Antibiotics are used for ev	-	-	Ensure healthy lives for all and at all ages SDG	-	It helps in developing technical skills that industry requires. And thus helps in



					provides a lot of employment.			ethics .	er y type of gender .			3.		creating employment .
Unit II	-	-	-	Antibiotics and antimalarial drugs are used globally to treat lethal infections caused by Plasmodium .	Production of antibiotics across the globe provides a lot of employment.	-	Antibiotics developed synthetically , helps in honing the technical skill and expertise in production	Usage of any medicine especially antibiotics is based on appropriate professional ethics .	Antibiotics and antimicrobials drugs are used for ev	-	-	Ensure healthy lives for all and at all ages SDG 3.		It helps in developing technical skills that industry requires .And thus helps in creating employment



									er y ty pe of ge nd er					
Unit III	-	-	-	Antitubercular and antiviral drugs are used globally to treat lethal infections caused by Mycobacterium tuberculosis and AIDS virus .	Production of anti tubercular and antiviral drugs across the globe provides a lot of employment	-	Antitubercular and antiviral drugs developed synthetically , helps in honing the technical skill and expertise in production	Usage of any medicine especially antibiotics is based on appropriate professional ethics	Anti tubercular and antiviral drug sare used for every ty	-	-	Ensure healthy lives for all and at all ages SDG 3.	-	It helps in developing technical skills that industry requires .And thus helps in creating employment .



					t.				pe of ge nd er					
Unit IV	-	-	-	Anti fungal drugs are used globally to treat lethal infectio ns caused by various fungus like Candid a and Trichon oma etc.	Pro duct ion of anti fung al acro ss the glob e prov ides a lot of emp loy men t	-	Anti fungal drugs developed syntheticall y , helps in honing the technical skill and expertise in production	Usage of any medicine is based on appropria te profession al ethics	A nti fu ng al dr ug s ar e us ed fo r ev er y ty pe of ge nd er	-	-	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.
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



				an Combinatorial chemistry is used globally to develop new drug molecules including docking techniques .	g with the help of docking generates plethora of employment .		technical skill ,	with a huge professional ethics .				lives for all and at all ages SDG 3.	technical skills that industry requires .And thus helps in creating employment.
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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 th 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	Professional education (17.1-17.5)	Global education knowledge



Unit II	-	-	-	To emphasize 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	Professional education (17.1-17.5)	Global education knowledge
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	Professional education (17.1-17.5)	Global education knowledge
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 immunomodulators	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3	Professional education (17.1-17.5)	Global education knowledge
Unit v	-	-	-	To gain knowledge related to general principles related to toxicology and chronopharmacology	-	-	The basic knowledge related to toxicity studies as well as chronopharmacology	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages SDG 3 and Skills for	Professional education (17.1-	Global education knowledge



Unit I			<p>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.</p>			<p>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.</p>					<p>Revitalize the global partnership for sustainable development (Role of all Schools, KR MU) (SDG 17)</p>	<p>Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9)</p>	<p>Technical Skills that match Industry Needs, Entrepreneurship, Employability</p>
Unit II		-	<p>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</p>			<p>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</p>							<p>Global Education Knowledge</p>



			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 Ensure significant mobilization of resources from a variety of sources..	
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,						Ensure health lives and promote well	Technology Use & Integration (23.



			the complex regulations governing pharmaceuticals, preparing students for careers in the global healthcare industry.			protecting intellectual property rights, and navigating regulatory frameworks. Such skills are crucial for careers in research, development, and compliance within the healthcare industry.					- being for all ages (SDG 3) Ensure sustainable consumption and production patterns (SDG 12)	1-23.13)	
Unit v			The study of "Schedule T - Good Manufacturing 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			The study of "Schedule T – Good 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					Ensure sustainable consumption and prod	Tec hnology Use & Inte grati on (23.1-	Corporate Alliances to provide Big Sister/Big Brother Connec



				incorporate best practices from Indian medicine into their own work.			ensure the safety, efficacy, and quality of herbal medicines and traditional remedies, thereby enhancing their competence in the field.					action patterns (SDG 12)	23.13)	Outcomes
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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/4th IR
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BP6 04T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Global Health care Needs. It will give the absorption of all the oral dosage forms, in order to make the better formulations products.	It will bring employment opportunities in the CROs	-	-	-	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SDG 3)	Professional Education (17.1-17.5)	Technical 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 formula tions product s.	It will brin g emp loya bilit y opp ortu 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 essional Edu catio n (17. 1- 17.5)	Technic al Skills that match Industry Needs
Unit III	-	-	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 ortu nitie s in the CR Os	-	-	-	-	-	-	Ensu re healt hy lives and pro mote well - bein g for all at all ages (SD	Prof essional Edu catio n (17. 1- 17.5)	Technic al Skills that match Industry Needs



				formulations products.								G 3)		
Unit IV		-	-	Global Healthc are Needs. It will give the pharmaco kinetics of all the oral dosage forms, in order to make the better formulations products.	It will bring employment opportunities in the CR Os	-	-	-	-	-	-	Ensure health lives and promote well - being for all at all ages (SD G 3)	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs
Unit v				Global Healthc are Needs. It will give the non-linear pharmaco kineti	It will bring employment opportunities	-	-	-	-	-	-	Ensure health lives and promote well -	Professional Education (17.1-17.5)	Technical Skills that match Industry Needs



				cs of all the oral dosage forms, in order to make the better formulations products.	nitie s in the CR Os							being for all ages (SD G 3)		
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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/4th IR
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BP6 05T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	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.	--	--	--	--	"Ensure healthy lives and promote 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.	--	--	--	--	"Ensure healthy lives and promote 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.	--	--	--	--	"Ensure healthy lives and promote 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 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	--	--	--	--	"Ensure healthy lives and promote 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 blood products for clinical use.	--	--	Technical proficiency, laboratory techniques, process optimization, quality assurance, problem-solving, attention to detail, research, and data analysis, which are valuable in pharmaceutical and biotechnology industries, research institutions, and regulatory bodies	--	--	--	--	"Ensure healthy lives and promote 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	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/4th 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 ,	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs



					Total Quality Management (TQM) principles.			accountability, and integrity in the pharmaceutical industry. They ensure the ethical production, testing, and distribution of pharmaceutical products, safeguarding patient safety and trust in the global healthcare system.							
Unit II	-	-	-	Efficient organization and personnel management contribute globally by fostering productivity, collaboration, and employee engagement across international teams, leading to streamlined operations, effective project execution, and a positive work culture, ultimately driving global business success and economic growth.	By fostering a structured and productive work environment, encouraging teamwork, skill development, and employee happiness, effective organisation and personnel management contribute to employability and lead to improved	-	-	Effective organization and personnel management contribute to professional ethics by establishing clear policies, promoting fair treatment, and fostering	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs	



					productivity, professional progress, and job retention rates.			a culture of integrity, thereby ensuring ethical conduct, respect for diversity, and accountability in the workplace, enhancing trust and upholding ethical standards globally.						
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 scientific findings, driving advancements in various fields and improving global scientific standards.	By giving professionals practical experience with analytical methods, data interpretation, and quality assurance principles, quality control and adherence to Good Laboratory Practises (GLP) contribute to skill development. These abilities promote competence and professional progression in the	-	-	Quality control and adherence to Good Laboratory Practices (GLP) contribute to professional ethics by promoting accuracy, reliability, and integrity in scientific testing and data reporting.	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs



					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 trustworthiness 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 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 pharmaceutical industry contribute to professional ethics by ensuring transparency, accountability, and adherence to	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs



					in quality assurance, regulatory affairs, and customer service roles.			regulatory standards, promoting integrity, and trust in dealing with customer concerns and maintaining accurate records of product information and processes.-						
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.	Professionals skilled in calibration and validation techniques are highly sought after in industries that require accurate measurements and reliable data, enhancing their employability and career prospects in quality control, laboratory management, and regulatory compliance roles.	-	-	Calibration and validation contribute to professional ethics by ensuring the integrity and accuracy of measurement and testing processes, promoting transparency, accountability, and adherence to regulatory standards, thereby	-	-	-	Skills for Decent Work (SDG 4.4)	Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs



							upholding ethical standards and maintaining trust in scientific research and data analysis.						
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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/4th IR
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BP6 07P	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Qualitative analysis of carbohydrates, sugars, and proteins is a common practice in biochemistry laboratories worldwide. These identification tests help researchers and scientists determine the presence or absence of specific biomolecules in a given sample.			Knowledge of qualitative tests can provide confirmation of the presence of certain moieties	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (SDG 4.b) Revitalize the global partnership for	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 High-quality research (18.1-18.9) Technology Use & Integration (23.1-	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability Skills (Local/Regional and



												sustainable development (SDG 17)	23.13)	Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
Unit II			Qualitative analysis of the presence of abnormal constituents in blood and urine sample is a common practice in biochemistry laboratories worldwide.			Knowledge of qualitative tests can provide confirmation of the presence of certain moieties	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (SDG 4.b) Revitalize 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 High-quality research (18.1-18.9)	Global Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs Focus on Employability	



											global partnership for sustainable development (SDG 17)	Technology Use & Integration (23.1-23.13)	Skills (Local/ Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation 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-Hasselbalch equation, you can design buffers for various applications, such as biological assays, enzymatic reactions, or laboratory	-	-	-	-	Sustainable Development and Global Citizenship (SDG 4.7) Scholarships for Higher Education (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 Education Knowledge Practical Courses from Industry /Alumni Technical Skills that match Industry Needs



						experiment s, where maintaining a specific pH is crucial.					4.b) Revita lize the global partner ship for sustain able develo pment (SDG 17)	High- quality research (18.1-18.9) Technology Use & Integration (23.1- 23.13)	Focus on Employ ability Skills (Local/ Regiona l 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	-	-	-	-	Sustain able Develo pment 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 interpretation of results.					Higher Education (SDG 4.b) Revitalize the global partnership for sustainable development (SDG 17)	Professional Education (17.1-17.5) Promoting High-quality research (18.1-18.9) Technology Use & Integration (23.1-23.13)	that match Industry Needs Focus on Employability Skills (Local/Regional and Global) Internship Programs Consulting Field Projects Entrepreneurship Program through Innovation System
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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 th 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	Professional education (17.1-17.5)	Global education knowledge



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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge
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	Professional education(17.1-17.5)	Global education knowledge



				<p>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.</p>			<p>them to learn techniques for identifying and analyzing chemical constituents, fostering critical thinking, and developing laboratory skills necessary for pharmaceutical research and drug discovery.</p>						<p>nership for sustainable development (Role of all Schools, KR MU) (SDG 17)</p>	<p>(17.1-17.5) Promoting High-quality research (18.1-18.9)</p>	<p>Entrepreneurship, Employability</p>
Unit II		-	-	<p>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</p>		<p>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.</p>									<p>Global Education Knowledge,</p>



				drug delivery and develop innovative pharmaceutical products.									
Unit III		-	-	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 Ensure significant mobilization of resources from a variety of sources..
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,						Ensure health lives and promote well Technology Use & Integration (23.



			comparability of results across different educational institutions. Additionally, standardized extracts promote transparency and reproducibility, fostering a shared understanding and enhancing collaboration among students worldwide.			enhancing their scientific knowledge and laboratory skills in a controlled and reproducible manner.					- being for all at all ages (SD G 3) Ensure sustainable consumption and production patterns (SD G 12)	1-23.13)	
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					Ensure sustainable consumption and prod	Tec hnology Use & Inte grati on (23.1-	Corpora te Alliance s to provide Big Sister/B ig Brother Connect



			for cosmetic products, ensuring quality, safety, and efficacy. This knowledge enables students to develop innovative and effective cosmetic formulations, contributing to the advancement of the global cosmetics industry.			regulatory requirements. This knowledge contributes to the development of advanced formulation skills, ensuring high-quality and standardized cosmetic preparations.					action patterns (SDG 12)	23.13)	ions
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Semester-VII

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/4th IR
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BP 701 T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	-	-	Characterization of Drugs help in drug discovery	-	-	-	With the aid of the UV-visible spectroscopy technique, scientists may easily ascertain the substance concentrations, examine reaction rates, and derive rate equations	-	-	-	-	Skills for Decent Work; Research-related skills (case study, seminars and hands on training) (SDG 4.4)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs/ Hands-on Experience



							for reactions, which can then be used to suggest a mechanism.							
Unit II	-	-	-	Learning of Techniques help to discover drugs	-	-	To understand the crucial function that infrared spectroscopy plays in the investigation of the structure of organic molecules To improve one's ability to identify distinctive absorption bands To determine a substance's	-	-	-	-	Skills for Decent Work; Research-related skills (case study, seminars and hands on training) (SDG 4.4)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs/ Hands-on Experience



							compositi on by analysing its infrared spectrum							
Unit III	-	-	Boost the diagnosi s, prognosi s and treatmen t of medical conditio n	-	-	-	Chromato graphy allows for the purificatio n, separation , and identificati on of a mixture's constituen t parts for qualitativ e and quantitati ve examinati on.	-	-	-	-	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 IV	-	-	-	Help in drug designnin 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 qualitative and quantitative examination.						h (18.1-18.9)	
Unit v	-	-	-	Ionizable compounds are separated using ion exchange chromatography according 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)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs/ Hands-on Experience



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 th IR
BP702T	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 Education Knowledge



				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	.	-	-	N o	-	(SD G 17)	(18.1-18.9)	Dedicat ed Career Manage ment Centres	



				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.									
Unit IV				Pharmaceutical Quality Management System (QMS) is a comprehensive collection of policies, processes, and procedures designed to ensure and maintain uniform and high quality in the production of pharmaceutical products.	A QMS supports business leadership, promotes customer focus, improves company culture and the bottom line, manages new innovations, and helps you understand any issues.	-	-	-	-	No	-	(SDG 17)	(18.1-18.9)	Dedicated Career Management Centres
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	-	-	-	-	No	-	(SDG 17)	(18.1-18.9)	Dedicated Career Management Centres



				and technical measures that governments take to ensure the safety, efficacy, and quality of medicines, as well as the relevance and accuracy of product information	s, medical devices, cosmetics and consumer health, natural health, and veterinary products.										
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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/4th IR
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BP 703T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I				Trained the students for different function of hospitals and staffs			In this Unit , Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non-clinical basis using ppt and assignment					Skills for Decent Work (SDG 4.4) Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Skill Development



Unit II	-	-	In this, Students will learn about the dispensing of drugs as per the standards harmonized globally			This unit based Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs	Skill development						Professional Education (17.1-17.5)	Employability
Unit III	-	-	Globally, Poisoning and suicides are challenges, students are trained to work under the drug,			In this, students learned and trained to Drug and Poison information centre, Sources of drug information, Computerised services, and storage								Skill Development



				poison and their storage, documentation			and retrieval of information							
Unit IV		-	-	Globally, Glaucoma, cataract and other eye disorders are increasing to many folds, thus trained the students and make them available as skilled researchers			In this, students will learn about the Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and							Skill Development



							Pharmaceutical care.							
Unit v							In this unit , students will learn Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure					Skills for Decent Work (SDG 4.4)	Professional Education (17.1-17.5)	Employability



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/4th IR
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BP704 T	Local	Regional	National	Global	Employability	Entrepreneurship	Skill Development	Professional Ethics	Gender	Human Values	Environment & Sustainability			
Unit I	This course is intended to provide fundamental information on different conventional drug delivery systems/controlled 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/controlled drug delivery systems with national 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 global relevance and	Their pharmaceutical industry/research department (national/international) has a wide choice of career opportunities.	This course knowledge gives you the ability to build a pharmaceutical medication development firm on a national and	This course is designed to teach basic information on various conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs.	This course is designed to teach on various conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs.	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SDG 3)	Institutional Restructuring and Consolidation (10.1-10.14)	Corporate/Company Trips/Projects



				developmental requirements. They can create novel dosage forms.		world wide scale.	y systems with local relevance and development needs. They have the ability to develop unique dosage formulations.	They have the ability to develop unique dosage formulations.							
Unit II	This course is intended to provide fundamental information on different Mucosal Drug Delivery system /Microcapsulation/implantable 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 /Microcapsulation/implantable drug delivery system with national relevance and developmental	This course is intended to provide fundamental information on different Mucosal Drug Delivery system /Microcapsulation/implantable	Their pharmaceutical industry/research department (national/international) has a wide choice of	This course knowledge gives you the ability to build a pharmaceutical medication develop	This course is designed to teach basic information on various conventional drug delivery	This course is designed to teach on various conventional drug delivery systems/controlled drug delivery systems with local	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SD	Institutional Restructuring and Consolidation (10.1-10.14)	Corporate/Company Trips/Projects	



	requirements. They can create novel dosage forms.		requirements. They can create novel dosage forms.	e drug delivery system with global relevance and developmental requirements. They can create novel dosage forms.	career opportunities .	ping firm on a national and world wide scale.	system s/controlled drug delivery systems with local relevance and development needs. They have the ability to develop unique dosage formulations.	relevance and development needs. They have the ability to develop unique dosage formulations.				G 3)		
Unit III	This course is intended to provide fundamental information on different Transdermal Drug Delivery Systems / Gastroretentive drug delivery	This course is intended to provide fundamental information on different Transdermal Drug Delivery Systems / Gastroretentive drug delivery systems/ Nasopulmonary	This course is intended to provide fundamental information on different Transdermal Drug Delivery Systems / Gastroretentive drug delivery	This course is intended to provide fundamental information on different Transdermal Drug	Their pharmaceutical industry/research department (national/inter	This course knowledge gives you the ability to build a pharm	This course is designed to teach basic information on various	This course is designed to teach on various conventional drug delivery systems/controlled	-	-	-	Ensure healthy lives and promote well-being	Institutional Restructuring and Consolidation	Corporate/Company Trips/Projects



	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 ations.	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)	
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 health y lives and	Insti tutio nal Rest ruct urin	Corpora te/Comp any Trips/Pr ojects



	<p>Targeted drug Delivery with local relevance and developmental requirements. They can create novel dosage forms.</p>	<p>regional relevance and developmental requirements. They can create novel dosage forms.</p>	<p>Targeted drug Delivery with national relevance and developmental requirements. They can create novel dosage forms.</p>	<p>information on different Targeted drug Delivery with global relevance and developmental requirements. They can create novel dosage forms.</p>	<p>research department (national/international) has a wide choice of career opportunities.</p>	<p>the ability to build a pharmaceutical medication development firm on a national and world wide scale.</p>	<p>basic information on various conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs. They have the ability to develop unique dosage formulations.</p>	<p>conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs. They have the ability to develop unique dosage formulations.</p>				<p>promote well-being for all ages (SDG 3)</p>	<p>global and Consolidation (10.1-10.14)</p>	
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Unit v	This course is intended to provide fundamental information on different Ocular 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 Ocular 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 Ocular Drug Delivery Systems with national relevance and developmental requirements. They can create novel dosage forms.	This course is intended to provide fundamental information on different Ocular Drug Delivery Systems with global relevance and developmental requirements. They can create novel dosage forms.	Their pharmaceutical industry/research department (national/international) has a wide choice of career opportunities.	This course gives you the ability to build a pharmaceutical medication development firm on a national and world wide scale.	This course is designed to teach basic information on various conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs. They have the ability to develop unique dosage formulations.	This course is designed to teach on various conventional drug delivery systems/controlled drug delivery systems with local relevance and development needs. They have the ability to develop unique dosage formulations.	-	-	-	Ensure healthy lives and promote well-being for all at all ages (SDG 3)	Institutional Restructuring and Consolidation (10.1-10.14)	Corporate/Company Trips/Projects
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Unit I	-	-	Characterization of Drugs help in drug discovery	-	Knowledge of UV spectroscopy increase the employability of the learner in analytical sector like QA department of Pharmaceutical companies	-	-	-	-	-	-	Skills for Decent Work; Research-related skills (SDG 4.4)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs/ Hands-on Experience
Unit II	-			Learning of Techniques help to discover drugs	Knowledge of Infra red and colorimetry spectr	-	-	-	-	-	-	Skills for Decent Work; Research-related skills	Professional Education (17.1-17.5); Promoting High-	Technical Skills that match Industry Needs/ Hands-on Experience



					scopy 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



					in analytical sector like QA department in method development and validation									
Unit IV	-	-	-	Help in drug estimation	Knowledge of HPLC increase the employability of the learner in analytical sector like QA department	-	-	-	-	-	-	Skills for Decent Work; Research-related skills (SDG 4.4)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs; Skill Development



					in method development and validation									
Unit v	-	-	Help in drug discovery & development by inhibiting enzymes	-	Knowledge of GLC increase the employability of the learner in analytical sector like QA department in method development and validation	-	-	-	-			Skills for Decent Work; Research-related skills (SDG 4.4)	Professional Education (17.1-17.5); Promoting High-quality research (18.1-18.9)	Technical Skills that match Industry Needs/ Hands-on Experience



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Semester-VIII

U	Relevance to the local, national, regional and global development needs	Relevance To the Employability/ Entrepreneurship/ Skill Development	Professional Ethics, Gender, Human Values, Environment & Sustainability	SDG	NEP	POE/4 th IR
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B P 8 0 1 T	Local	Regional	National	Global	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 b e d d e d C o u r s e s D e v e l o p m e n 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	-	-	-	-	Promoting High-quality research (18.1-18.9) By incorporating Unit III	Sk ill E



t I I I		<p>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.</p>	<p>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.</p>	<p>and novelty in research is of importance and ensures ethical professionalism as it doesn't favour the manipulation and false representation of data.</p>			<p>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.</p>	<p>m be dd ed Co ur se s De ve lo p m en t</p>
U n i t I V	-	<p>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,</p>	<p>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</p>			<p>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</p>	<p>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</p>	<p>Sk ill E m be dd ed Co ur se s De ve</p>



			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 collaboration between academia and industry, and contributes to the achievement of SDG 18 by driving research excellence and innovation.	lop p m en t
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-	-	-	SDG 12: Responsible Consumption and Production: The application of experimental design techniques promotes responsible consumption and production. By using factorial design and response surface methodology, industries can optimize resource	Promoting High-quality 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 achievement of SDG 18 by	Sk ill E m b e d d e d C o u r s e s D e v e l o p m e n



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.	--	Ensure healthy lives and promote well-being for all at all ages (SD G3)	--	Global education policy, Skill development
Unit II	--	--	--	Impart the knowledge on prevention and control of diseases along with their preventive and curative medicines available.	--	--	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.	--	Ensure healthy lives and promote well-being for all at all ages (SD G3)	--	Global education policy, Skill development



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	--	Ensure healthy lives and promote well-being for all at all ages (SD G3)	--	Global education policy, Skill development
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	--	Ensure healthy lives and promote well-being for all at all ages (SD G3)	--	Global education policy, Skill development
Unit v	--	--	Examine other approaches to resolving difficulties with health and	---	--	--	Control/eradication of contagious diseases, improvement of	--	--	Ensure access to healthcare, provide dignified living conditions, and	--	Ensure healthy	--	Global education 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 and promote well-being for all at all ages (SD G3)		development
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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/4th IR
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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 pharmacovigilance, individuals can position themselves for a wide range of rewarding career opportunities within the healthcare and pharmaceutical sectors.							SDG 3	(11.1-11.3)	Technical Skills that match Industry Needs/Employability
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 pharmacovigilance							SDG 3	(17.1-17.5)	Technical Skills that match Industry Needs/Coding



				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 pharmacovigilance.									
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, pharmacovigilance methods, and communication can significantly enhance employability in the field						SDG 3	(17.1-17.5)	Technical Skills that match Industry Needs/ Employability	
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 pharmacovigilance 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	



				pharmacovigilance planning										
Unit v			Students will have understanding CDSO guidelines and pharmacovigilance at the national level in India.	Students will understand and will develop skills for Drug safety evaluation in special population, pharmacogenomics of ADRs, & the CIOMS guidelines and forms.	By possessing expertise in pharmacogenomics, drug safety evaluation in special populations, CIOMS guidelines, CDSO regulations, and understanding the differences in Indian and global pharmacovigilance requirements, individuals can enhance their employability prospects in various sectors related to pharmacovigilance					SDG3		(17.1-17.5)	Technical Skills that match Industry Needs/ Internship	



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