

B. Pharm- Bachelor of Pharmacy



Ideal College of Pharmacy

MUMBAI UNIVERSITY

WADA

**CO-PO Mapping and Attainment of
Programme**

Batch (2023-24)

Programme: B. Pharm- Bachelor of Pharmacy (Batch 2023-24)

A. Programme Educational Objectives (PEOs)

PEO 1: To inculcate quality pharmacy education and training through innovative Teaching-Learning Process.

PEO 2: To train the students to contribute towards health care system and counseling for prophylaxis and prevention of diseases.

PEO 3: To promote professionalism, team spirit, social and ethical commitment with effective interpersonal communication skills to boost leadership role assisting improvement in healthcare sector.

PEO 4: To enhance Industry-Institute-Interaction for industry oriented education and research, which will overcome healthcare problems of the society.

PEO 5: To adapt and implement best practices in the profession by enrichment of knowledge and skills in research and critical thinking

PEO 6: To generate potential knowledge pools with interpersonal and collaborative skills to identify, assess and formulate problems and execute the solution in closely related pharmaceutical industries and to nurture striving desire in students for higher education and career growth.

B. Program Outcomes

PO. 1. Pharmacy Knowledge: Graduates will acquire strong fundamental concepts and adequate scientific information regarding basic principles of pharmaceutical, biomedical; behavioral, social, administrative and manufacturing practices by which they will be able to handle drugs safely and ensure the rationale use of drugs.

PO. 2. Drug development: Graduates will acquire the ability to develop and/or evaluate various pharmaceuticals and their formulations including cosmeceuticals and quality assurance of various pharmaceutical dosage forms including those of herbal origin as per standards of official monographs, WHO, and other regulatory agencies.

PO. 3. Social Awareness: Graduates will demonstrate the impact of pharmacy knowledge on the society and also will be aware of modern issues. They will create awareness of healthcare issues through interactions with others and will gain a sense of self-respect towards community and citizenship.

PO. 4. Pharmaceutical Ethics: Graduates will demonstrate knowledge of professional and ethical responsibilities as per pharmaceutical jurisprudence. They will be able to demonstrate knowledge and skills in all disciplines of Pharmaceutical sciences and develop a sound pharmaceutical care plan to manage medication-related problems. They will retrieve, evaluate, and apply current drug information in the delivery of pharmaceutical care and assure safe and accurate preparation and dispensing of medications.

PO. 5. Professional Identification: The graduates will swear by a code of ethics of Pharmacy Council of India in relation to community and shall act as integral part of a health care system. They will understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

PO. 6. Analytical Skills: Graduates will develop skills in qualitative and quantitative analysis of various pharmaceuticals. They will demonstrate their skills to use modern pharmaceutical tools, software, and equipments to analyze & solve problems. Develop skills in qualitative and quantitative analysis of various pharmaceuticals.

PO. 7. Leadership Skills: Graduates will develop interpersonal skills such as influencing others, negotiating and working with others, conflict management and leading others through the problem-solving process. They will be able to lead and function both individually and as a member of a team.

PO. 8. Communication: The graduates will acquire excellent interpersonal oral communication and writing skills. Demonstrate the ability of verbal communication and writing reports and to lead the team effectively.

PO. 9. Drugs and diseases: Graduates will be able to understand different classes of drugs, their mechanism of action, dynamics, kinetics, structure activity relationships, pathophysiology and pharmacotherapeutics of various diseases.

PO. 10. Problem analysis and Planning: Graduates will utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills.

PO. 11. Life-long learning: Graduates will 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-access and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Programme Courses:

- **Human Anatomy and Physiology (BP 101 T)**
- **Pharmaceutical Analysis-I (BP 102 T)**
- **Pharmaceutics-I (BP 103 T)**
- **Pharmaceutical Inorganic Chemistry (BP 104 T)**
- **Human Anatomy and Physiology-II (BP 201 T)**
- **Organic Chemistry (BP 202 T)**
- **Biochemistry (BP 203 T)**
- **Pathophysiology (BP 204 T)**
- **Pharmaceutical Organic Chemistry-II (BP 301 T)**
- **Physical Pharmaceutics-I (BP 302 T)**
- **Pharmaceutical Microbiology (BP 303T)**
- **Pharmaceutical Engineering (BP 304 T)**
- **Pharmaceutical Organic Chemistry-III (BP 401 T)**
- **Medicinal Chemistry-I (BP 402 T)**
- **Physical Pharmaceutics-I (BP 403 T)**
- **Pharmacology-I (BP 404 T)**
- **Pharmacognosy and Phytochemistry-I (BP 405 T)**
- **Medicinal Chemistry-II (BP 501 T)**
- **Industrial Pharmacy-I (BP 502 T)**
- **Pharmacology-II (BP 503 T)**
- **Pharmacognosy and Phytochemistry-II (BP 504 T)**
- **Pharmaceutical Jurisprudence (BP 505 T)**
- **Medicinal Chemistry- III (BP 601 T)**
- **Pharmacology-III (BP 602 T)**
- **Herbal Drug Technology (BP 603 T)**
- **Instrumental Method of Analysis (701 T)**
- **Industrial Pharmacy-II (BP 702 T)**
- **Pharmacy Practice-II (BP 703 T)**
- **Novel Drug Delivery System (BP 704 T)**
- **Biostatistics and Research Methodology (BP 801 T)**
- **Social and Preventive Pharmacy (BP 802 T)**
- **Pharmaceutical Regulatory Science (BP 804 ET)**
- **Pharmacovigilance (BP 805 ET)**

Course Wise CO PO Mapping and Attainment

FIRST SEMESTER Human Anatomy and Physiology (BP 101 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 101 T.1. Explain the gross morphology, structure and functions of various organs of the human body.

BP 101 T.2. Describe the various homeostatic mechanisms and their imbalances.

BP 101 T.3. Identify the various tissues and organs of different systems of human body.

BP 101 T.4. Perform the various experiments related to special senses and nervous system.

BP 101 T.5. Appreciate coordinated working pattern of different organs of each system.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101 T.1	3	2	1	1					1		1
BP 101 T.2	2	2	1	1					1		1
BP 101 T.3	2	2	1	1	1				1		1
BP 101 T.4	2	2	1	1	1	1			2		1
BP 101 T.5	3	2	3	2	3				2	1	1
Average	2.4	2.0	1.4	1.2	1.66	1.0	00	00	1.4	1.00	1.0

CO PO Calculation and Attainment:

Human Anatomy and Physiology (BP 101 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 101 T calculated value (Direct and Indirect)	0.84											
BP 101 T Attainment Value		0.67	0.56	0.39	0.33	0.46	0.28	00	00	0.39	0.28	0.28
BP 101 T Mapped Value		2.4	2.0	1.4	1.2	1.66	1.0	00	00	1.4	1.00	1.0
Status of Attainment		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Pharmaceutical Analysis-I (BP 102 T)

Course Outcomes:

Upon the completion of this course, the student will able to

BP102T.1. Understand the principles of volumetric and electro chemical analysis.

B P102T.2. Carryout various volumetric and electrochemical titrations.

BP102T.3. Develop analytical skills.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP102T.1	2	2				1			1		1
BP102T.2	2	2				1			1		1
BP102T.3	2	2				2			1		1
Average	2.0	2.0	00	00	00	1.33	00	00	1.0	00	1.0

CO PO Calculation and Attainment:

Pharmaceutical Analysis-I (BP 102 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 102 T calculated value (Direct and Indirect)	0.84											
BP 102 T Attainment Value		0.56	0.56	0	0	0	0.37	0	0	0.28	0	0.28
BP 102 T Mapped Value		2.0	2.0	00	00	00	1.33	00	00	1.0	00	1.0
Status of Attainment		NO	NO	---	---	---	NO	---	---	NO	---	NO

Pharmaceutics-I (BP 103 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 103 T.1. Know the history of profession of pharmacy.

BP 103 T.2. Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.

BP 103 T.3. Understand the professional way of handling the prescription.

BP 103 T.4. Preparation of various conventional dosages

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP-103.T 1	2	3				1			1		2
BP-103.T 2	3		2					2			2
BP-103.T 3	2	3							1		2
AVERAGE	2.33	3.0	2.00	00	00	1.00	00	2.00	1.00	00	2.00

CO PO Calculation and Attainment:

Pharmaceutics- I (BP 103 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 103 T calculated value (Direct and Indirect)	0.84											
BP 103 T Attainment Value		0.65	0.84	0.56	00	00	0.28	00	0.56	0.28	00	0.56
BP 103 T Mapped Value		2.33	3.0	2.00	00	00	1.00	00	2.00	1.00	00	2.00
Status of Attainment		NO	NO	NO	---	---	NO	---	NO	NO	---	NO

Pharmaceutical Inorganic Chemistry (BP 104 T)

Course Outcomes:

Upon completion of course student should be able to

BP 104T.1: Know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals. To know about history of pharmacopoeia. To know limit tests along with principles and reactions involved

BP 104T.2: To know acids, Bases and Buffers: Major extra and intracellular electrolytes and dental products.

BP 104T.3: Understand the methods of preparation, assay, properties and medicinal uses of gastrointestinal agents.

BP 104T.4: To know the methods of preparation, assay, properties and medicinal uses of expectorants. Emetics, Haematinics, Poison and Antidote, Astringents.

BP 104T.5: To know radiopharmaceuticals along with pharmaceutical application of radioactive substances.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 104T.1	3	2	1	1		1			1	1	2
BP 104T.2	3	2	1	1		1			1	1	2
BP 104T.3	3	2	1	1		1			1	1	2
BP 104T.4	3	2	1	1		1			1	1	2
BP 104T.5	3	2	1	1		2			1	1	2
Average	3.0	2.0	1.0	1.0	00	1.2	00	00	1.0	1.0	2.0

CO PO Calculation and Attainment:

Pharmaceutical Inorganic Chemistry (BP 104 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 104 T calculated value (Direct and Indirect)	1.4											
BP 104 T Attainment Value		1.4	0.93	0.46	0.46	00	0.56	00	00	0.46	0.46	0.93
BP 104 T Mapped Value		3.0	2.0	1.0	1.0	0	1.20	0	0	1.0	1.0	2.0
Status of Attainment		NO	NO	NO	NO	---	NO	---	---	NO	NO	NO

SECOND SEMESTER

Human Anatomy and Physiology-II (BP 201 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 201 T. 1. Explain the gross morphology, structure and functions of various organs of the human body.

BP 201 T.2. Describe the various homeostatic mechanisms and their imbalances.

BP 201 T.3. Identify the various tissues and organs of different systems of human body.

BP 201 T.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.

BP 201 T.5. Appreciate coordinated working pattern of different organs of each system

BP 201 T.6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 201 T. 1	2	1							1		1
BP 201 T. 2	2	2	1						2		1
BP 201 T. 3	2	1			1				1		1
BP 201 T. 4	3	3	2	3	3	3		2	2	3	1
BP 201 T. 5	2	1		1	1				1		1
BP 201 T. 6	2	1	1		1	1			1		1
Average	2.16	1.5	1.33	2.00	1.50	2.00	0	2.00	1.33	3.00	1.00

CO PO Calculation and Attainment:

Human Anatomy and Physiology-II (BP 201 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 201 T calculated value (Direct and Indirect)	1.4											
BP 201 T Attainment Value		1.00	0.70	0.62	0.93	0.70	0.93	00	0.93	0.62	1.40	0.46
BP 201 T Mapped Value		2.16	1.5	1.33	2.00	1.50	2.00	00	2.00	1.33	3.00	1.00
Status of Attainment		NO	NO	NO	NO	NO	NO	---	NO	NO	NO	NO

Organic Chemistry (BP 202 T)

Course Outcomes:

Upon the completion of this course, the student will able to

BP 202T.1: Write the structure, name and the type of isomerism of the organic compound.

BP 202T.2: Write the reaction, name the reaction and orientation of reactions.

BP 202T.3: Understand reactivity/stability of compounds.

BP 202T.4: Identify and confirm the identification of organic compound.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 202T.1	2	2							1		1
BP 202T.2	2	2							1		1
BP 202T.3	2	3							1		1
BP 202T.4	3	2				2			1		1
Average	2.25	2.25	00	00	00	2.0	00	00	1.00	00	1.00

CO PO Calculation and Attainment:

Organic Chemistry (BP 202 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 202 T calculated value (Direct and Indirect)	1.96											
BP 202 T Attainment Value		1.47	1.47	00	00	00	1.30	00	00	0.77	00	0.77
BP 202 T Mapped Value		2.25	2.25	00	00	00	2.0	00	00	1.00	00	1.00
Status of Attainment		Yes	Yes	---	---	---	Yes	---	---	Yes	---	Yes

Biochemistry (BP 203 T)

Course Outcomes:

Upon the completion of this course, the student will be able to-

BP203T.1: Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.

BP203T.2: Understand the metabolism of nutrient molecules in physiological and pathological conditions.

BP203T.3: Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 203T.1	2	2				2		1	1	2	1
BP 203T.2	2	2				2		1	1	2	1
BP 203T.3	2	2						1	1	1	1
Average	2.0	2.0	00	00	00	2.0	00	1.0	1.0	1.70	1.0

CO PO Calculation and Attainment:

Biochemistry (BP 203 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 203 T calculated value (Direct and Indirect)	1.16											
BP 203 T Attainment Value		0.77	0.77	00	00	00	0.77	00	0.38	0.38	0.65	0.38
BP 203 T Mapped Value		2.0	2.0	00	00	00	2.0	00	1.0	1.0	1.70	1.0
Status of Attainment		NO	NO	---	---	---	NO	---	NO	NO	NO	NO

Pathophysiology (BP 204T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 204 T. 1 The etiology and pathogenesis of certain diseases.

BP 204 T. 2 The sign and symptoms of diseases.

BP 204 T. 3 Complications of diseases.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 204 T.1	3	2	3	2					3		3
BP 204 T.2	3		3	2					2		2
BP 204 T.3	3		3						3	2	2
Average	3.0	2.0	3.0	2.0	00	00	00	00	2.6	2.0	2.3

CO PO Calculation and Attainment:

Pathophysiology (BP 204 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 204 T calculated value (Direct and Indirect)	2.52											
BP 204 T Attainment Value		2.52	1.68	2.52	1.68	00	00	00	00	2.18	1.68	1.93
BP 204 T Mapped Value		3.00	2.0	3.00	2.0	00	00	00	00	2.6	2.00	2.30
Status of Attainment		Yes	Yes	Yes	Yes	---	---	---	---	Yes	Yes	Yes

THIRD SEMESTER

Pharmaceutical Organic Chemistry-II (BP 301 T)

Course Outcomes:

Upon the completion of this course, the student will able to

BP-301.1. To understands the structure, name and the type of isomerism of the organic compound.

BP-301.2. To know about how to write the reaction, name the reaction and orientation of reactions.

BP-301.3. To understand the account for reactivity/stability of compounds.

BP-301.4. To know about Preparation of organic compounds.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP-301.1	3	3	2			1				2	3
BP-301.2	3	2	3			1				2	3
BP-301.3	3	2	1			2				2	3
BP-301.4	2	2				2				1	3
Average	2.75	2.25	2.0	00	00	1.5	00	00	00	1.7	3.0

CO PO Calculation and Attainment:

Pharmaceutical Organic Chemistry-II (BP 301T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 301T calculated value (Direct and Indirect)	3.0											
BP 301T Attainment Value		2.75	2.25	2.0	00	00	1.5	00	00	00	1.7	3.0
BP 301T Mapped Value		2.75	2.25	2.0	00	00	1.5	00	00	00	1.7	3.0
Status of Attainment		Yes	Yes	Yes	---	---	Yes	---	---	---	Yes	Yes

PHYSICAL PHARMACEUTICS-I (BP 302 T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP 302.1 Understand mechanisms of solute solvent interactions and physicochemical properties of drug molecules in the designing of dosage forms.

BP 302.12 Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.

BP 302.13 Demonstrate the use, method of determination and application of surface tension in the formulation development and evaluation of dosage forms.

BP 302.14 Understand various types of complexation and protein binding and its importance in pharmacy.

BP 302.5 Know the pH determination, application of buffers and importance of isotonic solutions

CO-PO MAPPING:

C O	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO
	1	2	3	4	5	6	7	8	9	10	11
BP 302.1	3	3				3	1			3	2
BP 302.2	3	3		2		3				3	3
BP 302.3	3	3	1	2	1	3	1	1	2	3	2
BP 302.4	3	3	1	2	1	3	1		3	3	3
BP 302.5	3	3	1	2	1	3	1	1	3	3	3
AVERAGE	3.00	3.00	1.00	2.00	1.00	3.00	1.00	1.00	2.66	3.00	2.6

CO PO Calculation and Attainment:

Physical Pharmaceutics-I (BP 302 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 302 T calculated value (Direct and Indirect)	0.84											
BP 302 T Attainment Value		0.84	0.84	0.28	0.56	0.28	0.84	0.28	0.28	0.74	0.84	0.73
BP 302 T Mapped Value		3.00	3.00	1.00	2.00	1.00	3.00	1.00	1.00	2.66	3.00	2.6
Status of Attainment		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Pharmaceutical Microbiology (BP 303 T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP-303.1. Understand methods of identification, cultivation and preservation of various microorganisms.

BP-303.2. Understand the importance and implementation of sterilization in pharmaceutical processing and industry.

BP-303.3. Learn sterility testing of pharmaceutical products.

BP-303.4. Carry out microbiological standardization of Pharmaceuticals.

BP-303.5. Understand the cell culture technology and its applications in pharmaceutical industries.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP-303.1	3	3	2	2	1	2	1	1	2	1	3
BP-303.2	3	3	1	3		2			1		2
BP-303.3	3	3	2	3	1	3	2		1	1	2
BP-305.4	3	3	-	2	1	3	2			1	3
BP-303.5	3	3	2	2	1	2	1	1	1	1	2
AVERAGE	3.00	3.00	1.40	2.40	0.80	2.40	1.20	0.4	1.00	0.80	2.40

CO PO Calculation and Attainment:

Pharmaceutical Microbiology (BP 303 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 303 T calculated value (Direct and Indirect)	2.28											
BP 303 T Attainment Value		2.28	2.58	1.06	1.82	0.60	1.82	0.91	0.30	0.76	0.61	1.82
BP 303 T Mapped Value		3.00	3.00	1.40	2.40	0.80	2.40	1.20	0.4	1.00	0.80	2.40
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

PHARMACEUTICAL ENGINEERING (BP 304 T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP 304 T. 1. Know various unit operations used in Pharmaceutical industries.

BP 304 T. 2. Understand the material handling techniques.

BP 304 T. 3. Perform various processes involved in pharmaceutical manufacturing process.

BP 304 T. 4. Carry out various tests to prevent environmental pollution.

BP 304 T. 5. Appreciate and comprehend significance of plant lay out design for optimum use of resources.

BP 304 T. 6. Appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

CO-PO MAPPING:

C O	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP-304.1	3			3	2					2	2
BP-304.2	3			2	2					2	2
BP-304.3	3	2	3	2			2	2	2	3	2
BP-304.4	3		2	2	2	3		2	3	3	2
BP-304.5	3	3	2	2	2	2	2			3	2
BP-304.6	3	2	2			2			2	3	2
AVERAGE	3.0	2.33	2.25	2.2	2.0	2.33	2.0	2.0	2.33	2.66	2.0

CO PO Calculation and Attainment:

Pharmaceutical engineering (BP 304 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 304 T calculated value (Direct and Indirect)	1.50											
BP 304 T Attainment Value		1.50	1.16	1.12	1.10	1.00	1.16	1.00	1.00	1.16	1.33	1.00
BP 304 T Mapped Value		3.00	2.33	2.25	2.20	2.00	2.33	2.00	2.00	2.33	2.66	2.00
Status of Attainment		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

FOURTH SEMESTER

PHARMACEUTICAL ORGANIC CHEMISTRY-III (BP 401 T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP401T.1. Understand the methods of preparation and properties of organic compounds

BP401T.2. Explain the stereo chemical aspects of organic compounds and stereo chemical reactions

BP401T.3. Know the medicinal uses and other applications of organic compounds

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP401T.1	3	2				2			1	2	1
BP401T.2	3	2									1
BP401T.3	3	2							2		2
Average	3.0	2.0	00	00	00	2.0	00	00	1.5	2.0	1.33

CO PO Calculation and Attainment:

Pharmaceutical Organic Chemistry-III (BP 401T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 401T calculated value (Direct and Indirect)	3.0											
BP 401T Attainment Value		3.0	2.0	00	00	00	2.0	00	00	1.5	2.0	1.33
BP 401T Mapped Value		3.0	2.0	00	00	00	2.0	00	00	1.5	2.0	1.33
Status of Attainment		Yes	Yes	---	---	---	Yes	---	---	Yes	Yes	Yes

MEDICINAL CHEMISTRY-I (BP 402 T)

Course Outcomes:

Upon the completion of this course, the student will able to

BP 402.1 Know about Principle of medicinal chemistry.

BP 402.2 Understand Mechanism/cause of disease or disorder.

BP 402.3 Illustrate chemistry of drugs in respect to their pharmacokinetic & pharmacological profile of drugs.

BP 402.4 Recall of Structural Activity Relationship (SAR) of different class of drugs with relate their biological activity.

BP 402.5 Understand Synthetic procedure of the drug with classification based on chemical structure.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 402.1	3	3	2	2		1			3	2	2
BP 402.2	2	2	3						3	2	2
BP 402.3	2	2				2			3	1	2
BP 402.4	2	2				2			3	1	1
BP 402.5	2	2				1			1	2	1
Average	2.6	2.6	2.5	2.0	0	1.5	0	0	2.6	1.6	1.6

CO PO Calculation and Attainment:

Medicinal Chemistry-I (BP 402T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 402T calculated value (Direct and Indirect)	3.0											
BP 402T Attainment Value		2.6	2.6	2.5	2.0	0	1.5	0	0	2.6	1.6	1.6
BP 402T Mapped Value		2.6	2.6	2.5	2.0	0	1.5	0	0	2.6	1.6	1.6
Status of Attainment		Yes	Yes	Yes	Yes	---	Yes	---	---	Yes	Yes	Yes

PHYSICAL PHARMACEUTICS-II (BP 403 T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP 403.1. Understand mechanisms of solute solvent interactions and physicochemical properties of drug molecules in the designing of dosage forms.

BP 403.2. Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.

BP 403.3. Demonstrate the use, method of determination and application of surface tension in the formulation development and evaluation of dosage forms.

BP 403.4. Understand various types of complexation and protein binding and its importance in pharmacy.

BP 403.5. Know the pH determination, application of buffers and importance of isotonic solutions

CO-PO MAPPING:

C O	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 403.1	3	3			3	3	3	1		3	3
BP 403.2	3	3	2	3	2	3		1		3	3
BP 403.3	3	3	2	3	2	3	3	1	2	3	3
BP 403.4	3	3	2	3	2	3	3	1	3	3	3
BP 403.5	3	3	2	3	2	3	3	1	3	3	3
AVERAGE	3.0	3.0	2.0	3.0	2.2	3.0	3.0	1.00	2.6	3.0	3.0

CO PO Calculation and Attainment:

Physical Pharmaceutics-II (BP 403T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 403T calculated value (Direct and Indirect)	3.0											
BP 403T Attainment Value		3.0	3.0	2.0	3.0	2.2	3.0	3.0	1.00	2.6	3.0	3.0
BP 403T Mapped Value		3.0	3.0	2.0	3.0	2.2	3.0	3.0	1.00	2.6	3.0	3.0
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

PHARMACOLOGY-I (BP 404 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 404 T.1 Understand the pharmacological actions of different categories of drugs

BP 404 T.2 Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.

BP 404 T.3 Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.

BP 404 T.4 Observe the effect of drugs on animals by simulated experiments

BP 404 T.5 Appreciate correlation of pharmacology with other bio medical sciences

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 404.1	3	2	1	2	1	1			3	1	2
BP 404.2	3	2	1	1	1	1			3		1
BP 404.3	3	1		2					3		2
BP 404.4	3	2		2		3			3	3	2
BP 404.5	3	1	1	3	1	1			3		2
AVERAGE	3.00	1.60	1.00	2.00	1.00	1.20	00	00	3.00	2.00	1.8

CO PO Calculation and Attainment:

Pharmacology-I (BP 404T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 404T calculated value (Direct and Indirect)	3.0											
BP 404T Attainment Value		3.00	1.60	1.00	2.00	1.00	1.20	00	00	3.00	2.00	1.8
BP 404T Mapped Value		3.00	1.60	1.00	2.00	1.00	1.20	00	00	3.00	2.00	1.8
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes

PHARMACOGNOSY AND PHYTOCHEMISTRY-I (BP 405 T)

Course Outcomes:

Upon completion of the course, the student shall be able-

BP 405T 1. To know the techniques in the cultivation and production of crude drugs.

BP 405T 2. To know the crude drugs, their uses and chemical nature.

BP 405T 3. Know the evaluation technique for the herbal drugs.

BP 405T 4. To carry out the microscopic and morphological evaluation of crude drugs.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 405T.1	3	2	3	1	1				2	1	2
BP 405T.2	2	3	2	1	1	1			2	1	2
BP 405T.3	2	1		2		1				1	3
BP 405T.4	1	2		1					1	2	1
Average	2	2	2.5	1.2	1	1	0	0	1.6	1.2	2

CO PO Calculation and Attainment:

Pharmacognosy and Phytochemistry-I (BP 405T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 405T calculated value (Direct and Indirect)	3.0											
BP 405T Attainment Value		2.00	2.00	2.5	1.2	1.00	1.00	0	0	1.60	1.20	2.00
BP 405T Mapped Value		2.00	2.00	2.5	1.2	1.00	1.00	0	0	1.60	1.20	2.00
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes

FIFTH SEMESTER

Medicinal Chemistry-II (BP 501T)

Course Outcomes:

Upon completion of the course, the student shall be able-

BP 501T.1. Understand the importance of drug design and different techniques of drug design.

BP 501T.2. Understand the chemistry of drugs with respect to their biological activity.

BP 501T.3. Know the metabolism, adverse effects and therapeutic value of drugs.

BP 501T.4. Know the importance of SAR of drugs.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP501T.1	2	2							1		1
BP501T.2	2	2							1		1
BP501T.3	2	2							1		1
BP501T.4	2	2			2	2			1	2	1
Average	2.0	2.0	00	00	2.0	2.0	00	00	1.0	2.0	1.0

CO PO Calculation and Attainment:

Medicinal Chemistry-II (BP 501 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 501 T calculated value (Direct and Indirect)	2.44											
BP 501 T Attainment Value		1.62	1.62	00	00	1.62	1.62	00	00	0.81	1.62	0.81
BP 501 T Mapped Value		2.0	2.0	00	00	2.0	2.0	00	00	1.0	2.0	1.0
Status of Attainment		Yes	Yes	---	---	Yes	Yes	---	---	Yes	Yes	Yes

INDUSTRIAL PHARMACY-I (BP 502 T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP 502T.1. Know the various pharmaceutical dosage forms and their manufacturing techniques.

BP 502T.2. Know various considerations in development of pharmaceutical dosage forms

BP 502T.3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 502T.1	3	3				1				1	2
BP 502T.2	3	3				1				1	2
BP 502T.3	3	3				1				1	2
AVERAGE	3.0	3.0	00	00	00	1.0	00	00	00	1.00	2.0

CO PO Calculation and Attainment:

Industrial Pharmacy-I (BP 502 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 502 T calculated value (Direct and Indirect)	1.32											
BP 502 T Attainment Value		1.32	1.32	00	00	00	0.44	00	00	0.81	0.44	0.88
BP 502 T Mapped Value		3.0	3.0	00	00	00	1.0	00	00	00	1.00	2.0
Status of Attainment		NO	NO	---	---	---	NO	---	---	---	NO	NO

PHARMACOLOGY-II (BP 503 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 503T.1: Understand the mechanism of drug action and its relevance in the treatment of different Diseases.

BP 503T.2: Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments

BP 503T.3: Demonstrate the various receptor actions using isolated tissue preparation.

BP 503T.4: Appreciate correlation of pharmacology with related medical sciences.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 503T.1	3	2			2				3		2
BP 503T.2	2	2	1	3		2			2	2	2
BP 503T.3	2	2	1	3		2			2	2	3
BP 503T.4	3				2				3		2
Average	2.50	2.00	1.00	3.00	2.00	2.00	00	00	2.5	2.00	2.25

CO PO Calculation and Attainment:

Pharmacology-II (BP 503 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 503 T calculated value (Direct and Indirect)	1.72											
BP 503 T Attainment Value		1.43	1.14	0.57	1.72	1.14	1.14	00	00	1.43	1.14	1.29
BP 503 T Mapped Value		2.50	2.00	1.00	3.00	2.00	2.00	00	00	2.5	2.00	2.25
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes

PHARMACOGNOSY AND PHYTOCHEMISTRY II (BP 504 T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP 504 T 1. To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents

BP 504 T 2. To understand the preparation and development of herbal formulation.

BP 504 T 3. To understand the herbal drug interactions.

BP 504 T 4. To carry out isolation and identification of phytoconstituents.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 504T.1	3	2		1	1	2			1	1	2
BP 504T.2	2	3	1	1		1			2	1	2
BP 504T.3	3	1	2	2	1				2	2	2
BP 504T.4	2	2		1		1				1	1
Average	2.5	2.0	1.5	1.2	1.0	1.3	00	00	1.6	1.25	1.75

CO PO Calculation and Attainment:

Pharmacognosy and Phytochemistry-II (BP 504 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 504 T calculated value (Direct and Indirect)	1.88											
BP 504 T Attainment Value		1.56	1.25	0.75	0.75	0.62	0.81	00	00	1.00	0.78	1.09
BP 504 T Mapped Value		2.5	2.0	1.5	1.2	1.0	1.3	00	00	1.6	1.25	1.75
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes

Pharmaceutical Jurisprudence (BP 505 T)

Course Outcomes:

Upon completion of the subject student shall be able to:

BP 505T 1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.

BP 505 T 2. Various Indian pharmaceutical Acts and Laws.

BP 505T 3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.

BP 505T 4. The code of ethics during the pharmaceutical practice.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 505T.1	3		2	3	1						2
BP 505T.2	2		1	3			1			2	1
BP 505T.3	2	2		3	1		1				2
BP 505T.4	3		2	3	2					1	2
Average	2.5	2.00	1.66	3.00	1.33	00	1.00	00	00	1.5	1.75

CO PO Calculation and Attainment:

Pharmaceutical Jurisprudence (BP 505 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 505 T calculated value (Direct and Indirect)	2.5											
BP 505 T Attainment Value		2.08	1.66	1.38	2.5	1.10	00	0.83	00	00	1.25	1.45
BP 505 T Mapped Value		2.5	2.00	1.66	3.00	1.33	00	1.00	00	00	1.5	1.75
Status of Attainment		Yes	Yes	Yes	Yes	Yes	---	Yes	---	---	Yes	Yes

SIXTH SEMESTER

MEDICINAL CHEMISTRY – III (BP 601 T)

Course Outcomes:

Upon the completion of this course, the student will able to

BP601T.1. Understand the importance of drug design and different techniques of drug design.

BP601T.2. Understand the chemistry of drugs with respect to their biological activity.

BP601T.3. Know the metabolism, adverse effects and therapeutic value of drugs.

BP601T.4. Know the importance of SAR of drugs.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP601T.1	2	2							2		1
BP601T.2	2	2							2		1
BP601T.3	2	2							2		1
BP601T.4	2	2			2	2			2	2	1
Average	2.00	2.0	00	00	2.0	2.0	00	00	2.0	2.0	1.0

CO PO Calculation and Attainment:

Medicinal Chemistry-III (BP 601 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 601 T calculated value (Direct and Indirect)	3.0											
BP 601 T Attainment Value		2.00	2.0	00	00	2.0	2.0	00	00	2.0	2.0	1.0
BP 601 T Mapped Value		2.00	2.0	00	00	2.0	2.0	00	00	2.0	2.0	1.0
Status of Attainment		Yes	Yes	---	---	Yes	Yes	---	---	Yes	Yes	Yes

PHARMACOLOGY-II (BP 602T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 602T.1: understand the mechanism of drug action and its relevance in the treatment of different infectious diseases

BP 602T.2: comprehend the principles of toxicology and treatment of various poisonings.

BP 602T.3: appreciate correlation of pharmacology with related medical sciences.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 602T.1	3	2	1		2				3		2
BP 602T.2	2	2	2	2	2	3			3	2	2
BP 602T.3	3	1		1	2				3		2
Average	2.66	1.66	1.50	1.50	2.00	3.00	00	00	3.00	2.00	2.00

CO PO Calculation and Attainment:

Pharmacology-II (BP 602 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 602 T calculated value (Direct and Indirect)	3.0											
BP 602 T Attainment Value		2.66	1.66	1.50	1.50	2.00	3.00	00	00	3.00	2.00	2.00
BP 601 T Mapped Value		2.66	1.66	1.50	1.50	2.00	3.00	00	00	3.00	2.00	2.00
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

HERBAL DRUG TECHNOLOGY (BP 603 T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP 603 T 1 .Understand raw material as source of herbal drugs from cultivation to herbal drug product.

BP 603 T 2. Know the WHO and ICH guidelines for evaluation of herbal drugs.

BP 603 T 3 Know the herbal cosmetics, natural sweeteners, and nutraceuticals

BP 603 T 4. Appreciate patenting of herbal drugs, GMP.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP-603T.1	3	2	2	2	1				1	1	2
BP-603T.2	3	3	2	2		1			2	1	1
BP-603T.3	2	2	2	2	1	1			1	1	2
BP-603T.4	3	3	1	3	1	1			2	1	3
Average	2.75	2.5	1.75	2.25	1.00	1.00	00	00	1.5	1.00	2.0

CO PO Calculation and Attainment:

Herbal Drug Technology (BP 603 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 603 T calculated value (Direct and Indirect)	3.0											
BP 603 T Attainment Value		2.75	2.5	1.75	2.25	1.00	1.00	00	00	1.5	1.00	2.0
BP 603 T Mapped Value		2.75	2.5	1.75	2.25	1.00	1.00	00	00	1.5	1.00	2.0
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	---	---	Yes	Yes	Yes

BIOPHARMACEUTICS AND PHARMACOKINETICS (BP 604 T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP 604 T.1. Understand the basic concepts in Biopharmaceutics and pharmacokinetics and their significance.

BP 604 T.2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.

BP 604 T.3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.

BP604T.4. Understand various pharmacokinetic parameters, their significance & applications.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 604 T.1	3	3		1		2			1	1	2
BP 604 T.2	3	3							1	1	2
BP 604 T.3	3	3							1	1	2
BP 604 T.4	3	3		1		2			1	1	2
AVERAGE	3.0	3.0		1.0		2.0			1.0	1.0	2.0

CO PO Calculation and Attainment:

Biopharmaceutics and Pharmacokinetics (BP 604 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 604 T calculated value (Direct and Indirect)	3.0											
BP 604 T Attainment Value		3.0	3.0	00	1.0	00	2.0	00	00	1.0	1.0	2.0
BP 604 T Mapped Value		3.0	3.0	00	1.0	00	2.0	00	00	1.0	1.0	2.0
Status of Attainment		Yes	Yes	---	Yes	---	Yes	---	---	Yes	Yes	Yes

Pharmaceutical Biotechnology (BP 605 T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP 605.1. Understanding the importance of Immobilized enzymes in Pharmaceutical industries.

BP 605.2. Genetic engineering applications in relation to production of pharmaceuticals.

BP 605.3. Importance of Monoclonal antibodies in industries.

BP 605.4. Appreciate the use of microorganisms in fermentation technology.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 605.1	3	3	3	2	2	3	2		3	3	3
BP 605.2	3	3	3	2	2	3	2		2	3	3
BP 605.3	3	3	3	3	2	3	1		3	3	3
BP 605.4	3	3	3	3	3	3	2	2	2	3	3
AVERAGE	3.0	3.0	3.0	2.5	2.2	3.0	1.75	2.0	2.5	3.0	3.0

CO PO Calculation and Attainment:

Pharmaceutical Biotechnology (BP 605 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 605 T calculated value (Direct and Indirect)	3.0											
BP 605 T Attainment Value		3.0	3.0	3.0	2.5	2.2	3.0	1.75	2.0	2.5	3.0	3.0
BP 605 T Mapped Value		3.0	3.0	3.0	2.5	2.2	3.0	1.75	2.0	2.5	3.0	3.0
Status of Attainment		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

PHARMACEUTICAL QUALITY ASSURANCE (BP 606 T)

Course Outcomes:

Upon completion of the course student shall be able to:

BP 606T.1. Understand the cGMP aspects in a pharmaceutical industry

BP 606T.2. Appreciate the importance of documentation

BP 606T.3. Understand the scope of quality certifications applicable to pharmaceutical industries

BP 606T.4. Understand the responsibilities of QA & QC departments

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 606T.1	3		1		1	3			1	3	1
BP 606T.2	3	1				2			1	2	1
BP 606T.3	3				2	2	1	1	1	2	1
BP 606T.4	3	2	1		1	3	1		1	3	1
AVERAGE	3.0	1.50	1.00	00	1.33	2.5	1.00	1.00	1.0	2.5	1.00

CO PO Calculation and Attainment:

Pharmaceutical Quality Assurance (BP 606 T)	CO Attainment out of 3 level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 606 T calculated value (Direct and Indirect)	2.84											
BP 606 T Attainment Value		2.84	1.42	0.84	00	1.25	2.36	0.94	0.94	0.94	2.36	0.94
BP 606 T Mapped Value		3.0	1.50	1.00	00	1.33	2.5	1.00	1.00	1.0	2.5	1.00
Status of Attainment		Yes	Yes	Yes	---	Yes	Yes	Yes	Yes	Yes	Yes	Yes

SEVENTH SEMESTER

Instrumental Methods of Analysis (BP 701T)

Course Outcomes:

Upon the completion of this course, the student will able to-

BP 701T.1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis

BP 701T.2. Understand the chromatographic separation and analysis of drugs.

BP 701T.3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 701T.1	3	2		1	1	3				2	2
BP 701T.2	3	3		1	2	3				3	2
BP 701T.3	3	2		1	1	3				2	2
Average	3.0	2.3		1.0	1.3	3.0				2.3	2.0

Industry Pharmacy II (BP 702 T)

Course Outcomes:

Upon completion of the course, the student shall be able to:

BP 702 T. 1. Know the process of pilot plant and scale up of pharmaceutical dosage forms.

BP 702T. 2. Understand the process of technology transfer from lab scale to commercial batch.

BP 702 T. 3. Know different Laws and Acts that regulate pharmaceutical industry.

BP 702 T. 4. Understand the approval process and regulatory requirements for drug products.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 702T.1	3	3	3	3		3				3	2
BP 702T.2	3	3			2						2
BP 702T.3	3	3	2	3							3
BP 702T.4	3	3			2					2	3
AVERAGE	3	3	2.5	3	2	3				2.5	2.5

Pharmacy Practice (BP 703T)

Course Outcomes:

Upon the completion of this course, the student will be able to

BP 703.1. Know various drug distribution methods in a hospital.

BP 703.2. Appreciate the pharmacy stores management and inventory control.

BP703.3. Monitor drug therapy of patient through medication chart review and clinical review.

BP 703.4. Obtain medication history interview and counsel the patients.

BP 703.5. Identify drug related problems.

BP 703.6. Detect and assess adverse drug reactions.

BP 703.7. Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states.

BP 703.8. Know pharmaceutical care services.

BP 703.9. Do patient counseling in community pharmacy.

BP 703.10. Appreciate the concept of rational drug therapy.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 703.1	3		2	3	1		2	3	3		2
BP 703.2	3			2			2		2	3	2
BP 703.3	2			1	1	2			3	3	1
BP 703.4	2		3	2	3	3		3	2	3	2
BP 703.5	2					3			3	3	2
BP 703.6	2		3			3		1	3	2	1
BP 703.7	2					3				3	2
BP 703.8	3		2	3						1	3
BP 703.9	3		3				1	3	1	2	3
BP 703.10	3		2		3		1				1
Average	2.5	00	2.5	2.2	2	2.8	1.5	2.5	2.42	2.5	1.90

Novel Drug Delivery System (BP 704 T)

Course Outcomes:

Upon the completion of this course, the student will be able to-

BP 704T.1. Understand various approaches for development of novel drug delivery systems.

BP 704T.2. Understand the criteria for selection of drugs and polymers for the development of NDDS, their formulation and evaluation.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BP 704T.1	3	3	2			3					3
BP 704T.2	3	2	2			3					3
AVERAGE	3.0	2.5	2.0			3.0					3.0

EIGHTH SEMESTER

Biostatistics and Research Methodology (BP 801 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 801 T.1: Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)

BP 801 T.2: Know the various statistical techniques to solve statistical problems.

BP 801 T.3: Appreciate statistical techniques in solving the problems.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 801 T.1	3	2		3	3	2			3	3	3
BP 801 T.2	3	2		1	2	2			1	2	2
BP 801 T.3	2	2				1				1	
Average	2.66	2.0	00	1.33	1.66	1.66	00	00	1.33	2.0	1.66

Social and Preventive Pharmacy (BP 802 T)

Course Outcomes:

Upon completion of this course the student should be able to:

BP 802T.1 Acquire high consciousness/ realization of current issues related to health and pharmaceutical problems within the country and worldwide.

BP 802T.2 Have a critical way of thinking based on current healthcare development.

BP 802T.3 Evaluate alternative ways of solving problems related to health and pharmaceutical issues

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 802T.1	3	1	2		1	1	2	3	3	2	2
BP 802T.2	2	2	2		2	1	3	2	3	1	2
BP 802T.3	1	2	3				2	2	2	1	2
Average	2	1.6	2.3	00	1.5	1.0	2.3	2.3	2.6	1.3	2.0

DRUG REGULATORY AFFAIR (BP 804 ET)**Course Outcomes:**

Upon completion of the subject student shall be able to;

BP 804ET.1. Know about the process of drug discovery and development.

BP 804ET.2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.

BP 804ET.3. Know the regulatory approval process and their registration in Indian and international markets.

CO-PO MAPPING:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
BPH 804.1	3	3	1	3	1	1			1	1	3
BPH 804.2	2	2	2	3	1		1	2		1	2
BPH 804.3	3	2	3	3	2					1	3
AVERAGE	2.6	2.3	2.0	3.0	1.3	1.0	1.0	2.0	1.0	1.0	2.6

PHARMACOVIGILANCE (BP 805 ET)**Course Outcomes:**

At completion of this paper it is expected that students will be able to-

BP 805 ET.1 Why drug safety monitoring is important?

BP 805 ET.2 History and development of pharmacovigilance

BP 805 ET.3 National and international scenario of pharmacovigilance

BP 805 ET.4 Dictionaries, coding and terminologies used in pharmacovigilance

BP 805 ET.5 Detection of new adverse drug reactions and their assessment

BP 805 ET.6 International standards for classification of diseases and drugs

BP 805 ET.7 Adverse drug reaction reporting systems and communication in pharmacovigilance

BP 805 ET.8 Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle

BP 805 ET.9 Drug safety evaluation in pediatrics, geriatrics, pregnancy and lactation

BP 805 ET.10 Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India

BP 805 ET.11 ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning

BP 805 ET.12 CIOMS requirements for ADR reporting

BP 805 ET.13 Writing case narratives of adverse events and their quality.

CO-PO MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 805 ET.1	3	2	2						2		2
BP 805 ET.2	2	2	2						1		2
BP 805 ET.3	3	1	2						2		2
BP 805 ET.4	2	1	2						2		2
BP 805 ET.5	3	2	2						1		2
BP 805 ET.6	2	2	2						1		2
BP 805 ET.7	3	2	2	2		2			2		2
BP 805 ET.8	2	2	2	2		2			1	2	2
BP 805 ET.9	2	2	3	2		2			2	1	2
BP 805 ET.10	3	2	3	2	2	2			2	2	2
BP 805 ET.11	3	2	3	2	1	2			2	1	2
BP 805 ET.12	2	2	3	2	1	1			2	1	2
BP 805 ET.13	3	2	3	2		1			2	1	2
Average	2.56	1.84	2.38	2.0	1.33	1.71	00	00	1.69	1.33	2.0



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